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[*Authors alone are responsible for the contents of their respective Papers.*]

CHESNEY GOLD MEDAL.—FIRST AWARD.

ON the death of General Sir George T. Chesney, Royal Engineers, K.C.B., C.S.I., C.I.E., a committee, composed of friends and brother officers, was appointed to raise funds to suitably commemorate his distinguished services. A special memorial was established at the Royal Indian Engineering College, Cooper's Hill, a portrait of the General was presented to Lady Chesney, and, at the request of the committee, the Council of the Royal United Service Institution consented to take over the balance which remained from the General Memorial Fund, for the foundation of a Gold Medal. The conditions ordain that this medal shall be awarded by the Council of the Institution from time to time, as funds admit, to the author of "an original literary work treating of Naval or Military Science and Literature, and which has a bearing on the welfare of the British Empire."

It will be seen by the accompanying correspondence that the first medal has been awarded to Captain A. T. Mahan, United States Navy.

31st May, 1900.

SIR,—The Council of the Royal United Service Institution of Great Britain, of which I am President, have requested me to be the medium of communicating to you a resolution, which was carried at a recent meeting of their body.

The Gold Medal, founded in memory of the late Sir George Chesney, a distinguished officer of the Royal Engineers, is to be awarded from time to time on the decision of the Council of the Royal United Service Institution, to the author who has produced an original literary work treating of Naval or Military Science and Literature, and which has a bearing on the welfare of the British Empire.

The first award of the medal having come under the consideration of the Council, it was resolved that you should be invited to accept the distinction in consideration of the three great works, of which you are

the author: — "The Influence of Sea Power upon History," "The Influence of Sea Power upon the French Revolution and Empire," and "The Life of Nelson."

It is a matter of satisfaction to me to be the means of assuring you that the award has been made at the unanimous will of the Royal United Service Institution of this country, which was founded, and is maintained, for the promotion of Naval and Military Art, Science, and Literature in the British Empire.

I am, Sir,

Your obedient servant,

GEORGE,
President.

Captain A. T. MAHAN, U.S. Navy.

QUOGUE, NEW YORK,
10th July, 1900.

HIS ROYAL HIGHNESS THE DUKE OF CAMBRIDGE,

SIR,—I have the honour to acknowledge the receipt of your letter of 31st May, transmitting to me the Chesney Gold Medal, with the gratifying notification that the Council of the Royal United Service Institution have awarded it to me in recognition of the bearing of my works—"The Influence of Sea Power" and "The Life of Nelson"—upon the welfare of the British Empire.

In expressing my thanks, it seems scarcely necessary to say how deeply I feel the personal honour of this distinction, conferred by the unanimous wish of a professional organisation of the high standing of this, over which your Royal Highness presides. May I be permitted to add that I value even more highly, if that be possible, the assurance that, in such competent judgment, my works have contributed in some degree to the welfare of the British Empire, the strength of which is so essential to the cause of our English-speaking race, and of mankind in general.

I have the honour to be,

With profound respect,

Your most obedient servant,

A. T. MAHAN,
Captain, U.S. Navy.

THE KNIGHTS HOSPITALLERS AND AMBULANCE WORK IN WAR.

By Major A. C. YATE, 29th (The Duke of Connaught's Own) Regiment of Bombay Infantry (2nd Baluch Battalion).

Friday, May 4th, 1900.

Earl EGERTON OF TATTON, Chancellor of the Order of the Hospital of St. John of Jerusalem in England, in the Chair.

I.

I HAVE to tell what one Order of Knighthood, more ancient than the Orders of the Garter or the Golden Fleece, has done—firstly, to protect Christendom from the Mahomedans; and secondly, to promote philanthropy in the widest sense of the word.

When in the first half of the seventh century Mahomedanism began its career of conquest, Christianity had spread from its starting-point in Jerusalem, not only through Europe, but over Asia Minor, Syria, Egypt, North Africa, and Abyssinia, and into Arabia. It had established itself in Central Asia, if not in China. Merv in the fifth century was the seat of a Nestorian and in the fourteenth century of a Greek archbishopric. In the nineteenth century the Russians re-established there the faith which Arabs and Tartars had swept away. Samarkand also, I believe, was at one time the seat of a Christian bishopric. In Persia the priesthood of the Zoroastrian religion, familiar to us as the Magi, set themselves steadfastly against the introduction of Christianity, so that when the armies of Islam overran Persia, they found comparatively few Christians there. Now it must not be supposed that the Mahomedans, though it was by the sword that they spread the tenets of their faith, treated the Christians at first with merciless severity. It should be borne in mind that both Christianity and Judaism were well known in Arabia, that Mahomed himself was brought into familiar contact with them, that the Arabs and the Jews claimed descent from one ancestor, the Patriarch Abraham, and that the Mahomedan faith recognises Adam, Noah, Abraham, Moses, and Christ as the greatest of God's prophets, prior to Mahomed himself. Thus Christianity and Islam had a great deal in common, and this partly explains why, for more than three centuries after the rise of Islam, the Christians in Jerusalem were treated with more than toleration. The second reason was that the transit trade between the East and Europe

brought much treasure into the Moslem coffers. When in A.D. 637 the Saracens defeated the armies of the Byzantine Empire in Syria and Palestine, and Jerusalem found itself forced to surrender, the Christian Patriarch Sophronius went out in person (by prior agreement) to meet the Caliph Omar, and the two rode into the Holy City side by side. The Caliph granted to the Christians the free exercise of their religion, the possession of their churches, and the rights of pilgrimage, subject to a light tax. Charlemagne early in the ninth century exchanged embassies with Hârun-ar-rashid, and with that Caliph's consent established at Jerusalem a hospice for pilgrims. When, however, the Fatimide dynasty of Egypt conquered Syria at the end of the tenth century, the position of the residents and pilgrims became less favourable. The pilgrim traffic in those days between Europe and the Holy Land was no doubt a source of pecuniary profit to merchants and shipowners, especially to those of the Italian ports. Mere gain, however, was, let us hope, a secondary consideration. It was rather religious zeal that prompted some merchants of Amalfi (a maritime port situated just south of Naples) to found at Jerusalem, in the first quarter of the eleventh century, with the permission of the Caliph of Egypt, an establishment for the reception of Christian pilgrims, called in the Latin of that time "hospitium," whence the word "hospice." It was dedicated to St. John the Almoner. In this establishment the pilgrims were lodged, and, if sick, cared for. The utility and consequent popularity of the institution was such that it soon attracted pecuniary support, not only from the pilgrims themselves, but also from pious donors in all parts of Christendom. Large numbers of volunteers joined in assisting the good work which it was doing. With ever-increasing funds, members, and work, some definite organisation soon became necessary. From this organisation rose the Order of the Knights of St. John of Jerusalem. In 1065 the barbarous Seljuk Turks overran Palestine. The Christians suffered terribly; and all Christendom was profoundly moved by the news of the atrocities that were committed. Towards the close of the century Peter the Hermit traversed all Europe preaching a Crusade. In response to this call, sanctioned by the Pope, thousands from all parts began to flock across Europe and Asia Minor *viâ* Byzantium towards the Holy Land. Four great hordes of so-called crusaders, numbering their tens or even hundreds of thousands, composed of men and women and even children, were destroyed, two in Hungary: one in Asia Minor, and one in Bulgaria.

After this, in A.D. 1096, the first Crusade was organised. The leaders of it bear names familiar to most of us: Godfrey of Bouillon, Robert, brother of William the Conqueror, Raymond of Toulouse, Robert of Flanders, Bohemond, and Tancred. This host consisted of not less than six hundred thousand persons, exclusive of priests and women. However, I am treating here not of the Crusades, but of their influence on the Order of St. John. After the capture of Jerusalem in 1099, many of the wounded soldiers were tended in the Amalfi Hospital of St. John. The leaders of the Crusade conferred endowments on the hospital, and many of the Crusaders sought permission to join the ranks of its fraternity. Its Head, Peter

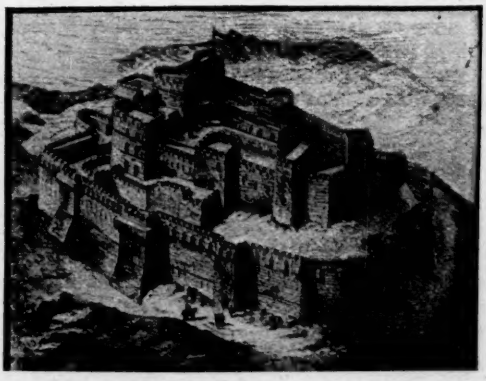
Gerard, now proposed that the fraternity should be formed into a regularly constituted religious body, bound by vows of obedience, poverty, and chastity, and subject to the jurisdiction of the Patriarch of Jerusalem. This being approved, each member was invested by the Patriarch with a black robe bearing on its breast the eight-pointed white cross, now known as the Maltese Cross. This became the recognised mantle of the Order, as the white mantle with red cross became that of the Templars, and the white mantle with the black cross that of the Teutonic knights. The knights of St. John, when arrayed for battle, wore over their armour a red surcoat with a plain white cross. All three Orders fought to protect Jerusalem from the Mahomedans. The Order of St. John was the first instituted, being formally sanctioned by a bull of Pope Paschal II. in 1113. Up to the death of Peter Gerard in 1118 the Order remained a monastic and religious one; but under his successor in the mastership, Raymond du Puy, the monastic knights took a fresh oath to protect pilgrims on the roads from the sea to the Holy City. This oath was soon afterwards extended into one which pledged them to defend the Holy Sepulchre to the last drop of their blood, and to make war upon the followers of Islam wherever they might meet them. At this time, or perhaps earlier, St. John the Baptist was adopted as patron saint. Of the three Knightly Orders instituted in the eleventh and twelfth centuries for the defence of Jerusalem against Islam, that of St. John is the one which was first founded, which rendered by far the greatest services to Christendom, and which at the present day, when military orders are no longer needed or recognised, does a great philanthropic work in maintenance of its motto *Pro utilitate hominum*.

The Order of the Templars was founded in 1119, and suppressed by a Papal Bull in 1312, the bulk of its property and endowments, which were enormous, being transferred to the Order of St. John. The Templars were from first to last a military Order. The Order of Teutonic Knights, on the other hand, had its origin in a hospital founded at Acre in 1190 by some merchants of Bremen and Lübeck, and modelled itself on the rules formulated by the Knights Hospitallers of St. John. It became a military Order in 1199, and after its expulsion from the Holy Land by the Saracens about A.D. 1290, devoted itself, during the thirteenth and fourteenth centuries, to the forcible conversion to Christianity of the Prussians, Lithuanians, and Poles. It was practically suppressed by Napoleon in 1809. An Austrian branch still exists, and maintains an organisation for the care of the wounded in war.

I have allowed myself for the moment to anticipate the sequence of events, and must now return to the foundation in A.D. 1099 of what is known as the "Latin Kingdom" by the leaders of the First Crusade. With the maintenance of that short-lived and precarious monarchy, the history of the two Orders of the Hospitallers and Templars is closely bound up. They were its strongest bulwarks. Indeed, they were, though perfectly independent, its standing army. In 1176, when, during the minority of Baldwin IV., King of Jerusalem, a Regent was needed, he was nominated by the Grand Masters of the two Orders. The excellence of

their organisation and discipline made them, as troops, far superior to the bulk of the crusading forces. About 1150 we find Louis VII. of France regulating his whole army on the model of the Templars. The kings, princes, and nobles of Europe had endowed these Orders with great wealth. The Pope himself was their Spiritual Head. They held landed property in and drew revenues from every country in Europe. Their Grand Priors and Commanders represented them at every Court. They were the outward and visible sign in Palestine of that religious zeal which from time to time sent hundreds of thousands of Crusaders, led by the greatest monarchs of Europe, to protect the scene of the birth and martyrdom of Christ from the followers of Mahomed. Despite, however, all their efforts, Salah-ud-din (Saladin), Sultan of Egypt, a self-made man of Kurdish race, won Jerusalem back from them in 1187. They were then forced to seek some other stronghold as a base of operations. They selected Acre, which had also fallen to Saladin in 1187. To their aid came Frederick Barbarossa, Emperor of Germany, Richard Cœur-de-Lion of England, and Philip Augustus of France at the head of the Third Crusade. After a siege of twenty-three months, Acre, despite the efforts of Saladin to save it, capitulated. It is said that 100,000 Crusaders lost their lives during the siege. Acre now became the centre of the two Orders, to each of whom a separate portion of the city was allotted. They strengthened its fortifications, the Templars also building 20 miles further south on the coast the stronghold known as Athlît, or Pilgrims' Castle, the vast ruins of which exist to this day. At Acre, at the end of the twelfth century, they were joined, as has been already related, by the Order of the Teutonic Knights. It is no place here to enter into the rivalries and intrigues that set the Latin Kings, the Knightly Orders, and the leaders of the Crusades at variance with one another. Suffice it to say that they were at variance, even to the extent of intriguing not only with their arch-foe Saladin, who was at least a chivalrous soldier and a brave and honourable man, but with such dubious allies as the "Assassins" of the "Old Man of the Mountain." Where such jealousy and animosity existed, success was impossible. It is curious in these days to read that, after the victories of our Richard the Lion-hearted over the gallant Saladin, it was proposed, as a basis of the treaty of peace, that Richard's sister, the ex-Queen of Sicily, should marry Saifuddin, Saladin's brother, and that only the opposition of the Christian priests prevented acceptance of the proposal. (Marriage between Christians and Moslems is of very old date. About A.D. 730 the Moslem Governor of Cerdagne married Lampegie, the daughter of Eudes, Duke of Aquitaine, and entered into an alliance with him. *Vide* Amir Ali's "History of the Saracens," p. 147.) It does not, however, seem likely that even such an alliance as that would have brought lasting peace to Christian and Muslim in the Holy Land. Frederick II. of Germany, though under ban of ex-communication by the Pope, did, indeed, win back Jerusalem in 1228 at the head of the Fifth Crusade, and crowned himself King (the last Christian King) of Jerusalem; but in 1244 a savage horde from Khiva in Central Asia overran Syria, and occupied the Holy City. The news of this incited Louis IX. of France (Saint Louis) to embark on the Sixth Crusade.

AMALFI.
(*The old Capuchin Monastery was carried away in a landslip on 22nd December, 1899.*)

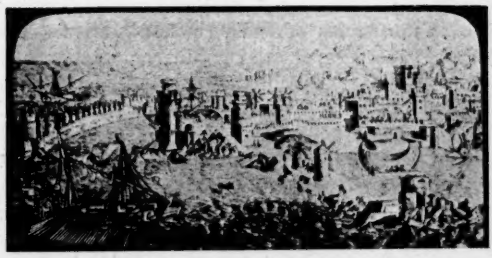


Fortress of the Knights Hospitallers in Syria, taken from the Kurds by the Franks about the year 1123, and rebuilt in 1202. A representation of it as restored. Engraving from "Monuments of the Architecture of the Crusaders in Syria," by M. G. Roy.

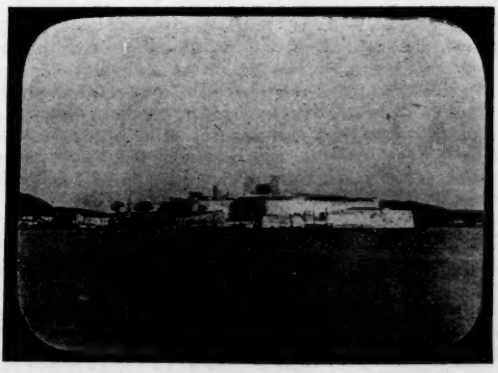
It was a failure. The last or Seventh Crusade was led after the death of St. Louis, by our King Edward I. (then Prince Edward), a good soldier and capable general. His high reputation gathered round him all who were willing to fight for The Cross. He failed, however, to achieve anything of importance, and finally returned to England about 1271, the last of the Crusaders. Acre, Antioch, Margat, and Tripoli were then still in the hands of the three Knightly Orders, and for twenty years were stubbornly defended by them. But true as they were individually to their vow to wage undying war against the infidel, and staunchly as they would stand by each other in defence of the common cause, their union of strength was sapped by the rivalry and ill-will that existed between the three Orders. The Templars were inimical to Frederick II. of Germany, the last Latin King, and vented their hatred for him on the Teutonic Knights. These they appear to have driven out of Acre. Half a century or more of rancour and jealousy between the two great Orders, the Hospitallers and the Templars, broke out in 1243 and 1259 in open war between them. In 1260 the Order of the Templars is said to have numbered 20,000 Knights alone (not all, by any means, however, in the Holy Land); and as the Hospitallers are said to have been victorious in the encounter of 1259, we must infer that their strength and numbers were not inferior to those of the Templars. Despite their long and deadly feud, however, these two Orders were bound by mutual agreement not to receive ejected members of the rival Order, and the Templar cut off in battle or defeat from all hope of rejoining his own ranks might rally to the White Cross of St. John, or *vice versâ*. Whatever their faults, and they seem to have been many (the charges which in 1312 were the pretext for the suppression of the Templars are very grave indeed), their courage, their gallantry, and their devotion to the duty to which they had avowed themselves, are beyond reproach. They never quailed before the enemy, nor did they ever seek to save their lives at the cost of their faith. The higher grades of both Orders were at once Knights and Monks, and realised each in his own person the highest ideal of the mediæval ages —that of dauntless chivalry and stainless devotion. They waged war single-, or, we should perhaps say, double-handed, against all the forces of Islam. By 1290 Margat, Antioch, and Tripoli had all fallen before the overwhelming numbers and power of the Saracens. In 1291 Acre fell, after a long siege and desperate resistance, before the arms of the Caliph of Egypt. The few Hospitallers and Templars who escaped retreated to their ships under cover of the arrows of their archers, and set sail for Cyprus. The Order of the Templars ceased to exist in 1312. The Teutonic Knights betook themselves to Germany, there to coerce to Christianity the heathen of Prussia, Poland, and Lithuania. The Knights of St. John alone remained to oppose the whole power of Islam in the Mediterranean.

II.

There is sufficient proof that the Arabs, when they obtained in the seventh century after Christ a footing on the seaboard of the Mediterranean, were competent seamen and navigators. Sprung from the same Semitic



Plan of the Island of Rhodes.—Reduced *fac-simile* of one of the large Topographical Plans in the "Saintes Peregrinations de Hierusalem," by Broydenbach; in folio, with copperplate figures. Lyons, 1488. (Library of M. Ambr. Firmin-Didot.)



BUDRUM, OR "ST. PETER OF THE FREED."
(*Fortress of the Knights on the coast of Asia Minor opposite Rhodes, and a refuge for escaped Christian prisoners and slaves in the 15th century.*)

stock as the Phœnicians, and possessing a seaboard extending from Suez round to the mouth of the Shat-el-Arab, they seem to have rivalled in Indian and East-African seas the maritime enterprise of Tyre and Sidon in the Mediterranean and Atlantic. Sayad Amir Ali claims for the Arabs the invention of the mariner's compass, and states that they voyaged to all parts of the world in quest of knowledge and in the pursuit of commerce. Sir Thomas Holdich thinks that the Arabs were the first astronomers and earliest navigators, and that Vasco de Gama not improbably was guided by Arab pilots to the shores of India (in 1498). It is stated by Sayad Amir Ali that the Arab fleets on the Mediterranean about A.D. 650 were strong enough to drive the Byzantine fleets into the Hellespont, and to invade and reduce the islands of the Greek Archipelago. Mahomedan pirates as well as Saracen fleets infested the Mediterranean. Europe, therefore, during the Crusades had to contend with a power strong on the seas as well as by land. After the Knights Hospitallers withdrew from Acre to Limasol in Cyprus in 1291, they turned their attention to the creation of a powerful fleet. This done, they attacked Rhodes, and in 1310 won it from its Saracen inhabitants. In 1312 all the possessions of the Knights Templars were transferred to them by the Pope. This greatly swelled their finances and consequently their power. In or about A.D. 1330 the Order was divided into eight *langues* (literally languages, in other words, national corps)—Provence, Auvergne, France, Italy, Aragon, England, Germany, and Castile.[1] At this time the Order is said to have possessed 28,000 manors[2] in the different countries of Europe. Each *langue* embraced one or more grand priories, each of which again comprised a number of commanderies.[3] The title of Grand Master is said to have

[1] Castile and Portugal, properly speaking. This eighth *langue* was, to be accurate, not created till 1461. The Anglo-Bavarian *langue* was founded in 1782.

[2] A manor in those days meant "the extent of land that could be tilled by one yoke oxen."

[3] These commanderies served as offices for the administration of the lands and other sources of revenue, as places of retirement for sick and aged brethren, and as centres for the reception of recruits. In spring and summer of every year (up to 1291, when the Hospitallers withdrew from the Holy Land), respectively, took place the *passagium Martis* and the *passagium Sancti Johannis*, from Europe to Palestine, when the newly-admitted knights left the commanderies or preceptories of the West, taking with them hired foot soldiers, armed pilgrims, and contributions of money. (*Vide* Addison's "Templars," p. 107.) At the Anniversary Meeting of the Order on 25th June last, the Rev. T. W. Wood drew a most apt parallel between the manner in which in the old days the headquarters of the Order, in Syria, Rhodes, or Malta, called on each priory and commandery in Europe for its quota of recruits when danger threatened, or some warlike enterprise was about to be undertaken, and the manner in which in 1899-1900, every District Corps and Division of the St. John Ambulance Brigade had, in answer to the call from the headquarters of the Grand Priory of England at St. John's Gate, sent its contingent of trained ambulance men to complete the detachments required for service with the R.A.M.C. in South Africa. Thirteen such detachments have in the last nine months attended service in St. John's Church, prior to their departure. Just so we can imagine, in the old days, the knights and servants-at-arms would attend service in the Old Priory Church, before setting out for the Mediterranean.

been conferred on the head of the Order by Pope Clement IV. about 1265. The Order consisted of knights,[1] chaplains, and serving brothers, some of these last being fighting squires who followed the knights to war. The privileges and immunities enjoyed by the Order made it in a great measure independent of the regal, ecclesiastical, and legal powers of the countries of Europe in which its possessions lay. At the same time, policy obliged its representatives to conciliate those Powers. The statutes of the Order strictly enjoined absolute abstention from international wars and politics. The brethren, however, could not always resist the temptation of striking a blow for the side with which they sympathised, notably in the long feud between England and Scotland, and that in the Mediterranean between Venice and Genoa.

Christian refugees from all parts of the Mediterranean were encouraged to settle at Rhodes, the town and port were strongly fortified, agriculture improved, and the fleet augmented. In this small island the Knights of the Order of St. John held their own for more than two centuries against the whole power of Islam. (*Vide* Appendix I.) In 1344 they seized and fortified Smyrna on the mainland and held it till the hordes of the great devastator Timur-i-Lang (Tamerlane) drove them out of it in 1401. They then captured, and very strongly fortified, Budrum on the mainland. Here they kept dogs specially trained to find and aid escaping Christian slaves, just as the St. Bernard dogs of to-day are trained to find and aid people lost in the snow. In 1453 the Turks captured Constantinople. As the Mahomedan power spread, the position of the Hospitallers grew more difficult and dangerous. Still they held on, strengthening their fortifications, striking at their enemy as opportunity offered, and awaiting the siege, which they knew must come. It came in

[1] A good picture of a knight of the Order in its early days is difficult to find. That by Jost Amman in "Cleri totius Romanæ Ecclesiæ" is simply grotesque; that by Hollar in Dugdale's "Monasticon" appears fanciful. There are in the Cappella San Giovanni (the Baptist) in the Cathedral at Siena, three frescoes by Pinturicchio, representing Alberto Arringhieri, a knight of Rhodes, who in his later years was administrator of the works of Siena Cathedral. These frescoes were executed by Pinturicchio at the order and expense of Alberto Arringhieri, and are understood to be likenesses of him. One represents him as a young knight in armour, wearing the red surcoat, with its plain white cross on the breast, over his coat of mail. Another depicts him as a much older man wearing the black mantle with the eight-pointed cross. There is every reason to suppose that these pictures were painted from the life, and are, in point of dress, accurate.

In this same chapel of St. John the Baptist at Siena, according to "Murray's Guide to Central Italy," is "the Baptist's right arm presented by Pius II. in 1464." This statement is at variance with the account published shortly after the Siege of Rhodes in 1480 by William Caoursin, Vice-Chancellor of the Order. He states that the right hand of John the Baptist was transferred from Antioch to Constantinople, and in 1453 fell into the hands of the Sultan Muhamad II., when he captured the capital of the Byzantine Empire. His son Bayazid presented it towards the end of the fifteenth century to the knights of Rhodes. It remained in possession of the Order at Rhodes, and subsequently at Malta till 1798, when Napoleon captured Valetta. Stripped by him of its golden and jewelled casket, it was conveyed, with other precious relics, by the knights to St. Petersburg, where it now is.

ALBERTO ARRINGHIERI, KNIGHT OF RHODES, IN ARMOUR.
(*From the Fresco by Pinturicchio in Siena Cathedral.*)

ALBERTO ARRINGHIERI, KNIGHT OF RHODES, IN BLACK MANTLE.
(*From the Fresco by Pinturicchio in Siena Cathedral.*)

May, 1480, when from 70,000 to 100,000 (reports vary) Turks landed with guns and bombards of huge calibre and commenced operations. The strength of the Hospitaller garrison is unknown, but can scarcely have exceeded 10,000, and was probably less. The Turkish general was a renegade Greek of the Imperial family of Paleologus. Several traitorous Greeks and a German known as Master George assisted the Turks. It is satisfactory to know that Master George was hanged, and two of the Greeks killed; and that the general after his defeat was, *more Turco*, condemned to the bowstring, though finally let off with exile. A portion of the line of defences (rampart and ditch, with bastions at intervals, on the land side, and two walled moles and three towers on the sea side) was assigned to each of the eight *langues*. After a severe bombardment, the first assault of the Turks was delivered on the tower of St. Nicholas from the sea side. Fifty galleys landed a large body of soldiers, who tried to carry the tower by escalade. They were repulsed after several hours' fighting. The second assault commenced at midnight on 19th June, also on the tower of St. Nicholas and its mole. It was intended to be a surprise, but an accident gave the besieged a clue to the project of the besiegers. The result was that the attack was repulsed with heavy loss to the Turks. The third assault was delivered on 27th July after a heavy bombardment. The Turks actually carried the breach, occupied the ramparts, and by ladders descended into the streets. The Grand Master d'Aubusson himself, at the head of a body of knights and men-at-arms, drove them out again. The Grand Master received five wounds. Finally the Turks were repulsed at every point. By this time their loss had amounted to 9,000 killed and 30,000 wounded. Their spirit was broken, and the report of the approach of reinforcements for the garrison decided them to raise the siege.

The second siege was conducted in person by the Sultan Suleiman the Magnificent. He arrived in Rhodes on 26th June, 1522, with 100,000 soldiers and 60,000 labourers for engineering work. The garrison numbered only 4,000. All the assaults were repulsed up to the end of September. The Sultan was greatly discouraged. However, internal disaffection and the want of provisions brought about the surrender which the Turks could not effect. Europe, moreover, seems to have made no effort to aid the knights. The Grand Master, l'Isle Adam, found himself obliged to sign a capitulation, and on 1st January, 1523, the knights withdrew with all the honours of war to Crete. When the news of the evacuation of Rhodes reached the Emperor Charles V., King of Spain, and Emperor of Germany, he remarked, "Nothing in the world has been more nobly lost than Rhodes." He, with the approval of the Pope, in 1530, gave to the Order the islands of Malta and Gozo and the fortress of Tripoli on the north coast of Africa. Malta had been delivered from the African corsairs by the Normans in the eleventh century, and then passed under the sovereignty of Charles V. The Knights of St. John held it as a free fief, acknowledging the Emperor's suzerainty by the homage of a falcon to be presented to him annually. They had their own mint, army, and fleet, and their own accredited ambassadors at all the Courts of

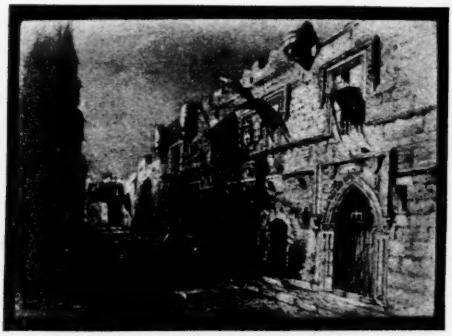
From an old print in the possession of Captain H. GARBETT, R.N.

Europe. Letters from crowned heads exist addressed to the Order as a sovereign or princely Power. What the knights did at Rhodes they repeated at Malta. They fought the Turkish squadrons and Moorish corsairs wherever they met them. In 1535 they joined the expedition against Tunis. Tripoli, like Smyrna, was, from the first, a precarious possession. The great Turkish corsair Dragut captured it in 1551. It has been the good fortune of the Order almost always to have at its head in time of greatest danger a Grand Master competent to command. John de la Valette[1] (Valetta takes its name from him) was a worthy successor of d'Aubusson and l'Isle Adam, who were Grand Masters during the two sieges of Rhodes. On 18th May, 1565, the Turkish fleet hove in sight, and what is spoken of as "one of the most memorable sieges in history" commenced. It was a desperate struggle, which terminated only on 8th September, after the death of 25,000 Turkish warriors. It is a defence that may almost rank with that of Gibraltar by General Eliott (1779-82). If anyone ever writes the history of the "Decisive Maritime Sieges of the World," the defence of Acre, Rhodes, and Malta by the Knights of St. John will surely be given a place in it. The gratitude of Christendom showed itself, after the repulse, in presents of money which went to meet the cost of building the new town of Valetta, to which object every Priory and Commandery of the Order contributed its quotum. In four years, *i.e.*, by 1570, Valetta, was built and fortified. It contains the great hospital of the Order (about 500 feet in length without a central support, said to be the largest room in Europe), still occupied as a military hospital. The Order continued for some time after this siege to be a powerful bulwark against Islam;[2] but after the defeat of the Turks at Vienna in 1683 by John Sobieski, the Moslems ceased to be a standing menace to Christendom. It is about this time that the Knights of Malta joined the Republic of Venice in attacking the Turks in the Morea and Negropont. Their combined forces were successful in Morea, but suffered a serious defeat in Negropont, and finally had to abandon this effort to free Greece from Mussulman rule. The decay of the Turkish power sounded the death-knell of the Order

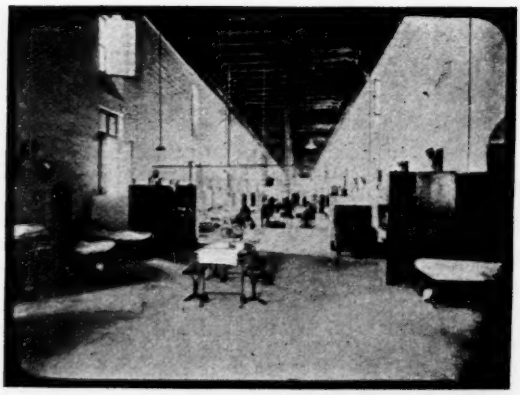
[1] After the successful issue of the Siege of Malta in 1565, La Valette was offered a Cardinal's hat. He declined it, though d'Aubusson, after the Siege of Rhodes of 1480, had accepted it. Knights of the Order of St. John not unfrequently rose to high ecclesiastical dignity. The Bishop of Malta was selected from among the members of the Order. Julio de' Medici was promoted by his uncle, Pope Leo X., from a Knight of St. John to be Bishop of Worcester, and Archbishop of Narbonne and Florence, and finally became Pope Clement VII. Von Kollonitsch, Bishop of Neustadt and defender of Vienna against the Turks in 1683, had also been a Knight of the Order. Viperan, the Knight who wrote an interesting account in Latin of the siege of 1565—in which he took part—became a Bishop.

[2] A good account, attractively written, of the life of the Knights in the seventeenth century, will be found in "The Adventures of Count George Albert of Erbach," a true story, translated from the German of Emil Kraus by H.R.H. Beatrice, Princess Henry of Battenberg. (John Murray, 1890.) The description of an investiture of Knights in the Church of St. John at Malta is especially interesting.

From an old print in the possession of Captain H. GARBETT, R.N.



STREET OF THE KNIGHTS IN RHODES, AS SEEN TO-DAY.



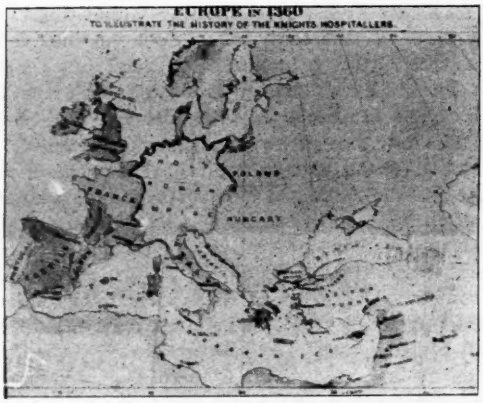
HOSPITAL OF THE KNIGHTS AT MALTA, AS SEEN TO-DAY.

as a military power. Its utility decreased, and in the eighteenth century the signs of disorganisation and consequent weakness began to show themselves, and when, at the end of the eighteenth century, danger threatened the Order from France, neither Grand Master nor Knights showed any trace of that spirit of cohesion and courage which had borne them through seven centuries of conflict with the Moslems. It was the French Revolution of 1789 that dealt the final blow to its strength. The Directory in 1792 decreed the abolition of the Order and the forfeiture of its possessions in France. The Grand Master de Rohan (of the highest nobility of France) died in 1797, and was succeeded by one Ferdinand Hompesch, a man who proved himself quite unequal to the stress of the times. He surrendered almost without an effort to Napoleon Bonaparte in 1798, and withdrew to Trieste. After this the lands possessed by the Order in the various countries seem to have been confiscated. Those in England had long before been taken from the Order by Henry VIII. and Queen Elizabeth. Strange to say, after the fall of Hompesch, a number of Knights who took refuge in Russia elected as Grand Master the Emperor Paul, a monarch of unsound mind (he was murdered in 1801) and the temporal head of the Greek Church, which for centuries had been estranged from the Order and its heads. The election was never legalised. Malta has now passed away from the Knights Hospitallers; but the monuments of their rule there, the palace, two great hospitals, the auberges of the eight *langues*, the library, and the Cathedral Church of St. John will endure for centuries, and the history of their war against Islam will be told as long as the present era of civilisation lasts.

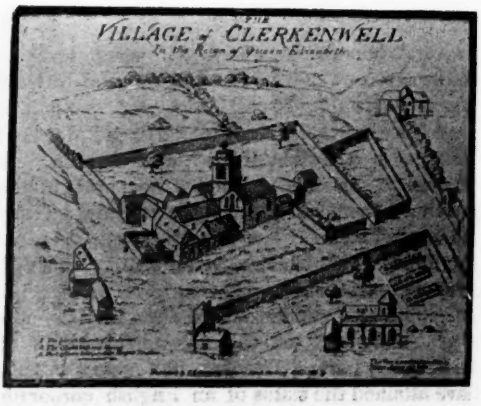
III.

Of the several branches of the Order which to this day exist in Europe, I shall speak here only of the English, the revival of which was formally decreed in 1827. The Brandenburg "Johanniter" Order is directly derived from the German *langue*, its Grand Master, Prince Albert of Prussia, being also a Knight of the English branch. Both branches devote themselves to hospital and ambulance work in peace and war. With changed times, manners, and religion the old military constitution could not be resuscitated. The English *langue* has in this century resumed those duties which in the eleventh century called the Order into being, viz., works of charity and philanthropy. In its original state as a voluntary confraternity, it was introduced into England about A.D. 1100, and located at Clerkenwell, on the northern outskirts of the City of London.[1] In the early part of the fourteenth century this English branch appears to have attained the status of an English corporation under the style of "The Order of the Hospital of St. John of Jerusalem in England." The Grand Prior ranked with the first barons of the realm.

[1] Mr. Round, writing in *Archæologia* for 1899, adduces evidence to show that the Order of the Hospitallers was not settled at Clerkenwell till the reign of King Stephen.

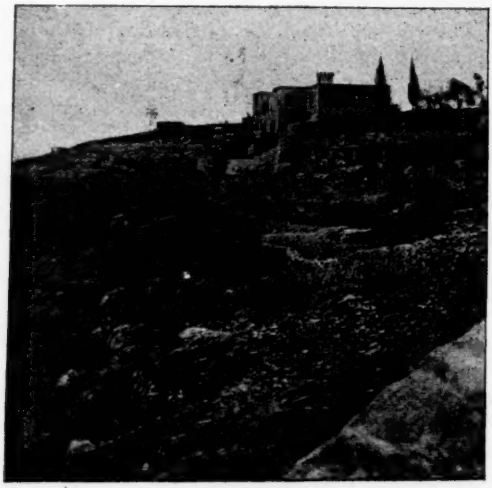


EUROPE IN 1360.



CLERKENWELL IN QUEEN ELIZABETH'S TIME.

His establishment at Clerkenwell was a large and important one, covering a wide area. When Henry VIII. quarrelled with the Pope he appropriated the revenues of the Order, of which he declared himself head. In 1553 Queen Mary re-established the English and Irish priories, and in 1557 incorporated them by Royal Charter under their old style and name. Queen Elizabeth on her accession again dissolved the Order and confiscated their property. To-day, almost hidden away amid the crowded thoroughfares north of St. Bartholomew's and Smithfield, may be seen the two remnants of the old Grand Priory, viz., the main entrance called St. John's Gate and the crypt of the old Church of St. John, one of the oldest existing bits of ecclesiastical masonry in London. Between the date of the suppression of the Order by Queen Elizabeth and its revival, these buildings were absolutely neglected, and, like the fine old Norman Church of St. Bartholomew the Great, used for any secular purpose. St. John's Gate was 150 years ago the place of business of Cave, a well-known printer and publisher, a contemporary of Dr. Samuel Johnson, who frequently had occasion to visit him there. However, the revival of the Order in 1827 was ere long followed by the rescue of these buildings from the unworthy uses to which they had been degraded. Over the crypt had been erected in the eighteenth century a modern church, in which now, annually on St. John's Day, the members of the Order meet for Divine Service. (*Vide* Appendix II.) St. John's Gate is the Chapter House and the centre of the great work that the Order carries on. Any visitors are readily admitted and shown the relics of the Order kept there. The Homage Roll contains a series of signatures, from that of Her Majesty the Queen downwards, which, in point of modern interest at least, cannot easily be rivalled. On the ground floor is the store department of the Ambulance Association, which owes much of its success and efficiency to Sir John Furley. Half a century of Hospitaller and charitable work, culminating in 1877 in the formation of the St. John Ambulance Association, won in 1888 for the Order a new Royal Charter of Incorporation under its original name and style. At the same time Her Majesty Queen Victoria was pleased to become the Sovereign Head and Patron of the Order, the Prince of Wales was nominated Grand Prior, and all or most of the Princes and Princesses of the Royal Family of Great Britain were enrolled as Knights and Ladies. I should here mention that Sisters of the Order existed from a very early period, possibly in the eleventh, certainly in the twelfth century. Women and nursing have always been associated. Early in the fourteenth century the Sisters lived at Buckland in Somersetshire, and remained there till 1540. To-day the Ladies look after and visit the sick and convalescents to whom the Order grants relief. The Princes and Princesses of the Blood Royal are not mere nominal but working members of the Order. Many of them, including the Princess of Wales and the Duke of Connaught, have been through the "First Aid" Class and obtained a certificate of efficiency. To the Princess Christian we are indebted for a good translation of Professor von Esmarch's "First Aid" lectures, a little book only second to Surgeon-Major Shepherd's handbook, the Vade-Mecum of the St. John



OPHTHALMIC HOSPITAL AT JERUSALEM.
(*From a Photograph by Colonel Wyndham-Murray, M.P.*)

THE PRECEPTORY OF SCOTLAND AT TORPHICHEN, AS SEEN TO-DAY.

Ambulance Association. Of that handbook 650,000 copies have been issued. Surgeon-Major Shepherd was no mere lecture-room professor of the principles of "First Aid." He was killed at Isandula in Zululand on 22nd January, 1879, while attempting to save the life of a wounded soldier. He is one of whom the R.A.M.C. may be proud.

Among the numerous philanthropic movements in which the Order has interested itself since 1827, I may mention the relief of convalescents from the great hospitals and infirmaries of the United Kingdom, the promotion of cottage hospitals in country districts, the maintenance of ambulance stations at central points, the institution of the Victoria Hospital at Cairo, and of a nursing home for the sick poor in London, the foundation in 1882 of the British Ophthalmic Hospital at Jerusalem, and the annual award of medals and diplomas for gallantry in saving life by land. The Sultan of Turkey himself presented the ground on which the Hospital now stands at Jerusalem ; just as, nearly nine centuries ago, the Caliph of Baghdad gave the Amalfi merchants a site for their Hospice of St. John. In 1898 the Hospital relieved 6,350 patients, of whom 600 were in-patients, and 1,330 underwent operations. The cost of maintaining it that year was £950 only—money well spent and well worked for. For 1899 the figures are :—In-patients, 466 ; out-patients, 4,036 ; operations, 1,033 ; expenditure, £1,475.

The awards for gallantry are presented every year by the Prince of Wales at Marlborough House, in the presence of the Chapter of the Order. I have noticed on several occasions that soldiers of Her Majesty's Army were among the recipients. This year (1899) a bombardier of the Royal Artillery received the Silver Medal, and a soldier of an infantry regiment one of the other decorations. They are worn on the right breast.

The work which the Order carries on in time of peace, it extends also to the sick and wounded in war—both to our own troops and to those of other civilised Powers.[1] During the Franco-German War it initiated an organisation for the relief of both combatants, which has since become known as "The National Society for Aid to Sick and Wounded in War," or more briefly "The Red Cross Society" ; and during the Russo-Servian War "The Eastern War Sick and Wounded Relief Fund." The existence of the South African Centre of the St. John Ambulance Association proved most opportune when the Transvaal War broke out. Through that centre and on behalf of the War Office the Association has supplied, and is still supplying, a large quantity of ambulance stores for the use of our forces there. It has furthermore sent out about 1,500 men of the St. John Ambulance

[1] When I gave this lecture in Edinburgh in March (1900), General E. F. Chapman, R.A., Commanding the Forces in Scotland, who took the chair, related how at Pardubitz in 1866, during the Austro-Prussian War, he found himself stranded one evening without food or shelter. To his relief, as darkness drew on, a voice hailed him in his mother-tongue and offered him a home for the night. This "good Samaritan" proved to be a St. John Ambulance man, and the night-shelter the ambulance. On his return to England Captain (as he then was) Chapman, mindful of this help in the hour of need, sought admission to the Order of St. John of Jerusalem in England, and obtained it.

Brigade for duty with our hospitals, and for the aid of the wounded and sick. This number is said to constitute about one-fourth of the entire subordinate Hospital Staff in South Africa. At the commencement of 1899 "The Central British Red Cross Committee" was established at the War Office, with H.R.H. the Princess of Wales as Honorary President. In bringing that about the Order of St. John of Jerusalem was largely instrumental. The value to the Army and the Nation of the work done during this war under the control of that committee is very great. The St. John Ambulance Association is only one, though the greatest, of the private ambulance societies of the Empire; and when I mention that it maintains nearly 300 centres in all parts of the world (in the large towns of the Empire containing 10,000 inhabitants or more), besides forming annually hundreds of "detached classes"; that it has awarded half a million certificates of efficiency; that it carries on its work on all the railways in the United Kingdom and in the chief mining, manufacturing, and other industrial centres; that it helps to educate the Police and Volunteers in a knowledge of "First Aid"; and that the St. John Ambulance Brigade (11,000 strong) has a detachment or detachments present at all large gatherings and demonstrations,—that will, perhaps, give some conception of what the resources of that Association and what the united resources of all the ambulance associations in Great and Greater Britain are. The Invalid Transport of the St. John Ambulance Association has, since 1883, conveyed about 20,000 sick persons to all parts of Great Britain and the Continent. At the Duke of York's wedding alone 1,500 cases were dealt with by the St. John Ambulance Brigade. How many occurred at Her Majesty's Diamond Jubilee I know not. The whole strength of the Brigade in London was at work that day. If anyone chooses to visit St. John's Gate, they will find there registered some of the many cases in which life has been saved by pupils of the Association. One of the most remarkable is this:—"In October, 1892, a man was picked up by a boat apparently drowned, and so sure was the boatman that he was dealing with a corpse, that he towed the man through the water to a yacht. The owner of the yacht at once took him ashore, and a medical man pronounced life to be extinct. However, two sanguine men resorted to artificial respiration, and after two hours animation began to return. The man was then placed in bed and carefully attended to, and on the following day recovered consciousness, and is now in good health."

In estimating the value of the work done by the Order of St. John of Jerusalem, we must give due weight to the merit of the initiative. When, in October, 1863, the first Red Cross Conference was held at Geneva, to frame an International Convention for the better care of the wounded in war, that Order was one of the six private philanthropic institutions which sent a representative to attend it. For thirty years before that the Order in England had been quietly carrying out the philanthropic and Hospitaller work, to which it had decided to devote itself. In this it was simply reviving the earliest traditions of the Order in the Holy Land—traditions which had been maintained both at Rhodes and Malta, as the statutes

of the Order show. Sir John Furley, who has since won for himself the distinction of being the first authority in England on ambulance work, and who is now the Chief Commissioner of the Central Red Cross Committee in South Africa, was in the early sixties just coming to the front as an earnest worker in the cause. Since then he has won experience in the Danish, Carlist, Austro-Prussian, Franco-Prussian, and Russo-Turkish wars. No medical man in the kingdom has had that experience. In times of peace, again, his life has been given to the study and construction of ambulance transport and material, from the simplest stretcher to the latest *chef-d'œuvre* of his design, the Princess Christian Hospital Train. In brief, be it in peace or in war, Sir John Furley has for the last forty years and more been second to none as a worker in the wide field of "First Aid" and ambulance work; and to him, in a great measure, is due the fact that our hospital and ambulance arrangements in the present war are better than any that the world has seen up to date. As in other branches of military organisation, so also in that of ambulance, we have learnt during this Transvaal War how great the resources of the Empire are. Under the British Central Red Cross Committee are now working the St. John Ambulance Association and Brigade, the Red Cross Society, the Army Nursing Reserve,[1] the St. Andrew's Ambulance Association, and a number of private bodies. To illustrate this, I cannot do better than refer to Lord Wantage's letter in the *Times* of 19th March last, which, after speaking of the invaluable assistance rendered by the South African Centre, the Canadian Red Cross Association, the New South Wales and other Australasian ambulance corps, gives the following list of Hospitaller units which are now working in South Africa under the orders of the Central Committee and under the personal supervision of Sir John Furley:—

1. The "Princess of Wales" Hospital-ship.
2. The Princess Christian Hospital-train.
3. The Portland Hospital.
4. The Irish Hospital (Lord Iveagh's).
5. The Imperial Yeomanry and Base Field Hospitals.
6. The American section of a field hospital (Mr. Van Alen's).
7. The Langman Hospital.
8. The Princess Christian Hospital (Mr. Moseley's).
9. The Scottish South African Hospital (Lord Provost of Edinburgh).
10. The Scottish National Red Cross Hospital (St. Andrew's Ambulance Association).
11. The Welsh Hospital.
12. The Southampton Ambulance Corps (which is doing duty in one of the military hospitals).

Lord Wantage further mentioned in that letter the interesting fact that the first supplies put into Kimberley after its relief were one hundred and four cases of comforts sent out through the St. John Ambulance

[1] Five hundred nurses of this Reserve are working in South Africa.

Association. The first train to cross the new Tugela bridge was the Princess Christian Hospital Train. In his evidence before the War Funds Enquiry at the end of March or early in April, Lord Wantage bore further testimony to the utility of that Central Committee, of which he is the chairman. The idea of forming such a committee germinated, I am told, forty years ago in the mind of Sir John Furley, but it only bore fruit in January, 1899, just in time for the Transvaal War. The needs of the present war have made both nation and War Office thankful for the magnificent "ambulance reserves"—if I may so term them—which the foresight of a few and the generosity and enterprise of the many have been able to send out to aid our sick and wounded. (*Vide* Appendix III.) The miseries of the Crimean War do not appear to have fully aroused our military administration. (*Vide* Appendix IV.) It is true that in 1859 there was founded at Woolwich that "Herbert Hospital," which Her Majesty visited last March, and with which the honoured names of Sidney Herbert, Florence Nightingale, and Douglas Galton are associated. (*Vide* Appendix V.) But more was needed than mere hospitals at home. Solferino, in which battle alone the numbers of the killed and wounded exceed those of our troops in South Africa up to date (10th April), warned the French and Austrians in particular, and Europe in general, of the inadequacy of the then existing hospital and ambulance arrangements in the field. Still, seemingly, Europe would not have moved had not three or four earnest Swiss gentlemen taken the initiative. Their appeal to Europe resulted in the now celebrated Geneva Convention. The red cross, under which ambulances and hospitals now work, is the reverse, so to speak, of the arms of the Swiss Confederation; that is, a red cross on a white ground, in place of a white cross on a red ground. The white cross on the breast of the red surcoat was worn in battle by the Knights of St. John of Jerusalem from the twelfth to the eighteenth centuries.

Although the St. John Ambulance Association does such grand work in the United Kingdom and in the Colonies, it has, curiously enough, established little or no foothold in India. Chancing to spend this last hot weather at Dalhousie, I bethought myself that I might just try and start a "First Aid" class. I can only say now that I am very glad that I did try. Both the classes that were formed, the one for ladies, the other for officers and N.C.O.'s, were well attended. I am deeply indebted to the medical officers there, especially to Lieut.-Colonel T. M. Corker, R.A.M.C.,[1] for the aid that they gave me. Almost all who attended the classes successfully passed the examination. When I saw how Dalhousie had responded to my appeal, I looked upon that as a proof that the want of these classes was generally felt in India. It is a country where war, *shikar*, polo, and other sports, and the accidents of everyday life, afford ample scope for utilising "First Aid" knowledge. For the education of the Army, British and Native, in rendering "First Aid," ample provision appears

[1] The "Corker Net" for the removal of the wounded from the firing line in savage warfare, or indeed from the battle-field in any warfare, was described by me in my lecture in January last on "Sixty Years of Frontier Warfare." (*Vide* JOURNAL for March, 1900.)

to have been made by regulation, *provided those regulations are carried out*. If, however, the Central British Red Cross Committee extends its sphere to India, as I am informed on the most sure authority that it will do, it must have material to work upon. It is serious to think that at this moment, if the Indian Army was involved in war with an European Power, there is absolutely no private Ambulance Reserve to aid the Army Medical Services. In 1897 plague, famine, and war so overstrained the medical resources of India that, even when all leave was stopped, help had still to be obtained from England. Realise what the overstrain would be if we had 100,000 men in the field against an European foe! The casualties would be tenfold those of any mere frontier fighting. In the large European civilian population, say a quarter of a million, and in the Volunteers, 30,000 strong, we have the material from which to develop a powerful reserve for ambulance work in war—provided the internal state of the country allows them to proceed on service. About 9,000 of these Volunteers are railway *employés*, a class of men to whom "First Aid" knowledge is of special use. As regards the means of instruction, we have in India a very large body of medical men and women, certainly able and probably willing to promote the cause of ambulance knowledge. It is, above all, the services of these qualified medical practitioners that the Order of St. John requires, and which it is most prompt to recognise and reward: Anyone who gives four sets of lectures is elected an Honorary Life Member of the St. John Ambulance Association. Those who render special services are appointed Honorary Associates of the Order of St. John. To start a class is a simple thing. Anyone who has the cause at heart can perform the duties of local secretary, which consist in making all the preliminary arrangements, conducting correspondence, collecting the fees, etc. The lecturer must be a diplomaed medical practitioner; the examiner likewise. A Shepherd's Manual (1s.) and an Esmarch Bandage (4½d.) are required for each student. A set of diagrams (15s.) are necessary, but are, as a rule, obtainable from any hospital or dispensary. An application to the chief secretary, at St. John's Gate, made by the local secretary, obtains from England within two months all the material, instructions, and printed forms that are needful for conducting a class. Fees are regulated according to the expenses, which are divided equally amongst the students. Male and female classes must be separate. The course consists of five lectures, each about an hour in length, concluding with half-an-hour's practical instruction in applying bandages and splints, stopping hæmorrhage, etc. Then the examination takes place. It may be both written and oral, or oral only. A list of those who pass is forwarded to St. John's Gate, and, in due course, a certificate of efficiency is sent to each successful examinee. My belief is that, whenever this movement has taken firm hold in India, the St. John Ambulance Association will establish a centre, probably in Bombay, whence stores can be issued. This will greatly expedite business. A few years ago a centre did exist at Bombay, and did excellent work, imparting instruction not only to the educated classes, but also to the police.

I do not intend here to speak at length on the extension of "First Aid" and "Nursing" instruction to the natives. If Europeans are ignorant, natives are much more so. I heard lately of an *ayah* applying ink to an officer's scalded child. The child died. I have seen a native woman applying anchovy sauce to her burnt baby. This work of enlightening the natives of the humbler classes can be best done by the missions. Our medical men and women have access to the higher and more advanced classes of natives. The police should all be trained. As ward orderlies, stretcher-bearers (see Appendix VI.), and hospital servants, natives are indispensable in this climate. No hospital corps could do without them. The maintenance of an ambulance transport or bearer corps is a useful work, to which native chiefs, desirous of aiding the Imperial Government, might be invited to devote their attention and resources. As far as my knowledge goes, both the Volunteers, the Police, and the missions would readily adopt "First Aid" instruction. My contention that missions can, if they choose, take up ambulance instruction is endorsed by what the St. Aidan Mission at Pietermaritzburg has recently done in aid of Sir Redvers Buller's army in Natal. To educate, to humanise, and to civilise are the main practical issues of Christian missionary labour. Humanity is the main-spring of "First Aid." It is not only that it fits a man to aid his neighbour when in pain or in danger of life, but it cultivates in him philanthropic sentiments, to which the native of India is strikingly callous. Ninety-nine out of one hundred of them are of the type that passes by on the other side, or that expends its little energy in useless chatter. "First Aid" instruction might act as a corrective to this. If it progresses among natives, vernacular translations of the handbook will be needful. These the missions can, and, I think, would, readily make. In Great Britain the St. John Ambulance Association finds its best field in the great manufacturing, mining, and industrial centres. In Australia it is doing the same work. During the last quarter of a century mining and manufacturing industries have made great progress in India, and nowhere more than in Bombay. Wherever machinery is at work accidents are inevitable. Owners of factories and mines should be the first to encourage ambulance instruction.

There are few of us who would not do all in our power to save human life. It is very distressing in the hour of need to feel ourselves incompetent. A course or two of "First Aid" lectures removes that incompetency. A little knowledge prevents us doing the wrong thing. That is *the* point—not to make the injury or disease worse. To apply a temporary splint, to stop serious loss of blood, to restore animation, to minimise the effect of poisons, burns, scalds, frostbite, etc.—these are the simple things that "First Aid" instruction teaches. This is no case in which a little knowledge is an evil. It is just that little knowledge which may save the sufferer from further injury. Careless handling and wrong remedies do mischief that the medical man cannot undo. The aim of the St. John Ambulance Association is, by popularising "First Aid" knowledge, and by the services of the trained Ambulance Brigade, to reduce the risks of that mischief to a minimum.

Finally, a word or two about "Hygiene." We need in India no further evidence than our daily experience—our knowledge of the ways of natives, of our own kitchens, of railway refreshment rooms with their unpalatable food and drink, of municipalities, of cheap soda factories, of a thousand and one ways in which uncleanliness and unwholesomeness are continually in India forced painfully on our attention—to prove that whatever can be done to promote "Hygiene," home or public, is a gain. Captain Woodruff, of the U.S. Army Medical Service, demonstrated, by examples taken from the Spanish-American War of 1898, the effects on troops in war-time of the neglect of hygiene. In India, as we know well, four-fifths of the casualties of war are due, not to steel and bullets, but to bad food and exposure. "Hygiene" is the third subject on which the St. John Ambulance Association gives classes of instruction, and nowhere in Her Majesty's dominions is that instruction more needed than in India. The present war in South Africa has been so far marked by the comparatively small number of casualties from disease pure and simple, as well as by the unusually large percentage of recoveries from wounds. Improved hygiene, improved ambulance and hospital arrangements, the provision by Government of the most skilled surgical aid, and the assistance rendered by the St. John Ambulance Association and Brigade, the Red Cross Society and the Nursing Reserve, have all contributed to this result. Moreover, this unity of co-operation would not have been attained, had the British Central Red Cross Committee not been ready to take in its hands the reins of control.

25th June, 1900.

P.S.—A day or two after this paper was finally revised for publication, a letter from Mr. Burdett-Coutts in the *Times* drew the public attention to Hospital management in South Africa. It is not the sphere of this paper to discuss the pros and cons of the question raised by Mr. Burdett-Coutts. One thing still remains certain, viz., that the sick and wounded in this war have been better cared for than in any previous campaign undertaken by British troops. At the same time, the fact that, despite the efforts of the Government and of the military and medical authorities, and despite the invaluable assistance rendered by the Central Red Cross Committee, there is still so much room for improvement only emphasises my contention that a strong and efficient ambulance reserve is imperatively needed in India, to aid and supplement the Staff and resources of the Army Medical Service in time of war. The material is there from which this reserve can be created. All that is wanted is the initiating and organising power.

APPENDIX I.

THE ORIGIN OF "FERT" ON THE SAVOY AND ITALIAN COINAGE.

The first serious Turkish attack on the Knights at Rhodes was made in 1315. It was repulsed with the aid of Amadeus V., Count of Savoy.

Sir Mountstuart Grant Duff in his Diary (Vol. I., 1886-8, p. 213) remarks:—"Bought at a moneychanger's an Italian coin to verify the statement which I found in an account of Rhodes, the other day, in Murray's Handbook for the Mediterranean, that the present Italian coinage bears the word *fert*, said to be the initials of the four words given as a motto to a Prince of Savoy, who had distinguished himself against the Turks, by the Grand Master of the Order of St. John—*Fortitudo Ejus Rhodum Tenuit.*"

The word *fert* (repeated three times) is now borne on the rim of the Italian silver coinage; and the fact that it is so borne shows that the present reigning family in Italy, which is descended from the ancient House of Savoy, accepts as true the tradition that the right to bear that word on its coinage was an honorary distinction conferred on that House.

Several explanations of the origin of this word *fert* have been given; but the most probable one is that which states that the Grand Master of the Knights Hospitaller at Rhodes conferred it on Amadeus V., Count of Savoy, to be borne as a device or motto on his arms, in recognition of the timely help which he gave the Knights in 1315, when their position at Rhodes was as yet insecure. The Order of St. John of Jerusalem, when located at Rhodes and Malta, was recognised and addressed as a "Sovereign" Order, and the Grand Master, as head of the Order, had the right to confer such distinctions, just as he had the right to coin money, and to maintain ambassadors or envoys at the various Courts of Europe.

General Whitworth Porter, in his "History of the Knights of Malta" (Vol. I., p. 208, first edition), accepts this explanation as correct, although in his second edition (p. 136) he adds a note to the effect that many writers have disputed its accuracy.

Domenico Promis, who is regarded as a very reliable authority, in "Moneti dei Reali di Savoia," 1841 (Vol. I., p. 75), thus pronounces his opinion:—"Molti di nostri storici dicono che l' anno sussequente (1315) andasse in Levante in aiuto ai cavalieri di Rhodi stretti dai turchi; che facesse sciogliere l' assedio, e indi prendesse la croce bianca in campo rosso, divisa di que' cavaliere, ed il motto *fert*, interpretato *Fortitudo Ejus Rhodum Tenuit.* Ma questo fatto è riguardato dai critici come favoloso, che la scudo della croce era già usato, come avanti abbiamo detto, del conte Pietro e dallo stesso Amadeo nel 1287 (v. 'Sigilli di Principi di Savoia,' p. 131), ed il motto *fert* non si conobbe prima di Amadeo VI."

The modern writer who has discussed this question most exhaustively is M. A. Ladé, Vice-President of the Swiss Numismatic Society. His

views and arguments are given in detail in the "Revue Suisse de Numismatique," 2me Année, 2me Livraison, 1892. Those who are interested in this subject can consult that work. The solution which M. Ladé suggests is that *fert* is an abbreviation of *ferto*, a Low Latin word, meaning "one-fourth," and akin to the English "farthing" and the German "viertel" (*conf.* Ducange's "Glossary of Mediæval and Low Latin" *s.v. ferto*). This solution does not carry conviction with it, as M. Ladé himself is disposed to admit in this very interesting letter, recently addressed by him to Messrs. Spink and Co., of Piccadilly, and most kindly communicated by them to me. This letter I will quote in extenso :—

Genève, le 22 Mai, 1900.

1. Les premières monnaies qui portent *fert* sont les quarts anonymes dont il est question dans la brochure que je vous ai envoyée. Promis et les auteurs qui l'ont suivi les attribuaient à la période comtale du règne d'Amédée VIII ; si on les fait remonter plus haut, en les donnant à Amédée VI, comme je l'ai fait et comme cela est accepté par les numismates italiens qui s'occupent des choses de la Savoie, il y a synchronisme entre la première apparition de *fert* sur les monnaies et sa presence sur les insignes de l'ordre du collier (actuellement appelé Annonciade), fondé en 1360, et quelques.

2. Quant à la signification de *fert*, j'en ai parlé tout au long dans la dite brochure. La question n'est pas encore résolue. Ce qui est certain, c'est qu'il faut renoncer à l'explication *Fortitudo Ejus Rhodum Tenuit*, ainsi qu'à *Foedere et Religione Tenemur*, etc. ; personne parmi celles dont l'opinion compte n'y croit plus. Quant à celle de Grote, tirée de l'Enéide, personne n'y a jamais cru. On ne peut balancer qu'entre l'explication que j'ai donnée : abréviation *ferto* = quart (analogue de *farthing*), dénomination de la monnaie où elle a paru d'abord, prise pour une devise et devenue par la suite une devise, et l'explication donnée pour la première fois par Senebier : *fert*, 3me personne du singulier du présent de l'indicatif du verbe *ferre* ; *fert*, il porte ; le complément direct est *crucem*, la croix (ou sa croix), non écrit, mais représenté par un dessin sur l'autre face. Après que j'ai eu proposé de faire de *fert* l'abréviation de *ferto*, on m'a fait deux objections (j'avais, du reste, solicité les contradictions) de valeur inégale :

a. On m'a dit qu'il n'était d'usage, au moyen âge, de suscrire sur les monnaies leur dénomination. C'est vrai, mais cela n'est pas sans exemple ; cela se faisait en France et en Savoie.

b. On m'a dit, d'autre part, que si *fert* avait été la dénomination de la monnaie, on ne comprendrait par pourquoi les princes d'Achaie, branche cadette de la maison de Savoie qui imitaient le plus possible les types de la branche principale, n'auraient pas mis ce mot sur leur numéraire et se seraient contentés de mettre un autre mot, destiné à servir de trompe-l'œil pour le public illettré, mais ne constituant pas un empiétement sur les droits du suzerain dont le mot *fert* était, parait-il, la propriété héraldique.

Cette objection est très forte. Sans me faire abandonner ma manière de voir, elle m'a rendu très hésitant entre l'hypothèse Senebier et la mienne.

Tout bien considéré, je penche donc actuellement plutôt pour l'explication de mon illustre compatriote, d'autant plus qu'on m'a signalé un cas analogue mais complété par un dessin ; les chevaliers de St. Jean de Jérusalem ont mis sur certaines de leurs monnaies : *Magnus magister hospitalis et sancti sepulcri Hierusalem.* Or, sur des sceaux de plomb, dont les dimensions ne permettent pas une légende aussi longue, on trouve : *hospitalis Hierusalem* et le dessin du Saint Sépulchre.

Enfin pour tout dire, et c'est ma dernière opinion (si Senebier a raison, je crois que Ladé n'a pas tort), il est fort possible que, sur les quarts où il a été mis pour la première fois, *fert* ait eu une double signification ; il est fort possible que le Comte Verd, venant de fonder l'ordre du collier avec la devise *fert* complété par les croix d'or ou d'argent doré qui s'y trouvent, ait eu l'idée de mettre ce mot sur la monnaie nouvelle qu'il venait de créer, où il servait à la fois de devise et de désignation de la pièce. En effet, Amédée VI reforma le monnayage de Savoie qui était dans le plus grand désarroi depuis longtemps, et encore pendant une grande partie de son règne.

En tout cas, il est certain qu'on ne peut pas croire à la tradition généralement admise autrefois que Amédée V, de retour d'une expédition à Rhode en aurait rapporté l'écu de gueules avec la croix d'argent et la devise *fert* ; l'écu à la croix blanche est de beaucoup antérieur, puisqu'il remonte à Pierre II, et *fert* est de beaucoup postérieur.

3. Quant au tombeau dont vous me parlez, je ne sais pas où il se trouve. Je me souviens d'avoir lu quelque part quelque chose de semblable. Ce n'est pas, en tout cas, à Hautecombe : j'ai étudié l'autre soir en détail le magnifique album que Charles Albert a consacré à la description de cette abbaye, remise à neuf et embellie par son prédécesseur, Charles Félix, et dont nous avons à l'Athénée un exemplaire, don de Marie-Christine, veuve de ce dernier ; mais je n'y ai rien trouvé de semblable. J'ai comme une vague idée qu'il s'agit du tombeau de Philibert II, enterré dans l'église de Brou, à Bourg-en Bresse ; mais je n'en suis rien moins que sur, et je n'ai pas de documents sous la main pour tirer cela au clair. A. LADÉ.

The pith of the objections of Messieurs Promis and Ladé is that the white cross was borne on the Savoy coinage considerably before 1315, and that "Fert" is not found on the Savoy coinage until the reign of Amadeus VI. (1343-1383), or, as Promis thinks, till the reign of Amadeus VIII. (the first *Duke* of Savoy, about 1416-34). It should be noted that the early Savoy coins bear no date or name, and consequently they cannot be attributed with certainty to a particular date or reign. Hence it is impossible or difficult to say in what year or under what reign the word "Fert" was first stamped on a Savoy coin. The author of "Anecdotes of Chivalry and Heraldry" (Worcester, 1795) says, on the contrary :—"The letters 'Fert' had long before (1315) been seen on the collar of a dog,

which was figured on the tomb of one of the kings of Sardinia, who had died long before the relief of Rhodes by Amadeus." The same writer states:—"The cross certainly became his [Amadeus V.] arms from some assistance which an ancestor of Amadeus had given them [the Hospitallers]." Here we have a writer, and one who agrees with Messrs. Promis and Ladé in declining to accept the solution "Fortitudo Ejus Rhodum Tenuit," making statements which tend to show that the House of Savoy used the device "Fert" earlier than the reigns of Amadeus VI. or VIII., and the white cross earlier than 1315. This latter fact is admitted by all writers, and there is no apparent reason why the Counts of Savoy should not have earned this distinction as early as the reign of Amadeus III., who joined the Crusade to the Holy Land in 1147, and died at Nicosia, in Cyprus, in 1148. Other princes of that House were also, doubtless, Crusaders. If this right to wear the Cross on their shield was conferred on the Counts of Savoy prior to 1315, then the addition of the motto "Fert" in commemoration of the assistance rendered by Amadeus V. in that year, becomes doubly appropriate. It signifies, as M. Senebier suggests, the device "Fert crucem," and it spells the initial letters of a sentence, "Fortitudo Ejus Rhodum Tenuit," which records the good work done by Amadeus V. in 1315.

M. Ladé, in paragraph 3 of his letter, seeks to elucidate the statement in "Anecdotes of Chivalry" that the word "Fert" had been seen on the tomb of a prince of Savoy prior to 1315. The Abbey of Hautecombe was founded by Amadeus III., who died at Nicosia in 1147. It was for centuries the burial place of the princes of the reigning dynasty of Savoy; but it was plundered and its monuments destroyed by the French Revolutionists in the last century. Other members of the House of Savoy were buried in the church of Brou. It is possible that a close examination of the monuments at Hautecombe and Brou might elicit information that would settle this question of "Fert." Meantime it seems at least fair to say that its association with the Order of St. John of Jerusalem has not been disproved; and that if, after all, it be but a legend, it is a beautiful legend, harmonising with the chivalric and religious spirit of the crusading age.

APPENDIX II.

The Church of the Grand Priory at Clerkenwell.

The original church of the Order of St. John at Clerkenwell is considered to have been built about 1175, and consecrated in March, 1185, by Heraclius, Patriarch of Jerusalem, then on a visit to England. He, during the same visit, consecrated the Temple in London, the church of the Knights Templar, and one of the four round churches in England. The other three are at Cambridge, Northampton, and Maplestead. The crypt of the Church of St. John, which still exists, is considered to be of an earlier date than the original church. Over the crypt was the chancel, while the nave stood where the open square (St. John's) now is. This church was destroyed by Wat Tyler's mob, rebuilt by

the Grand Prior, Sir Thomas Docwra, and again pulled down and used for building materials by the Protector Somerset in 1549. How far Hollar's print (dated 1661) accurately represents the buildings of Sir Thomas Docwra's Priory is open to question. Of the earlier church no description or picture or plan has come down to us. By the excavations commenced in May last at the west end of the crypt and present church, the plinth and base of the original wall have been laid bare. The masonry is perfect. The portion of the wall laid bare appears to be the segment of a circle, and the inference is that the nave of the first church of the Hospitallers, like that of the Templars, was circular. That such was the case is practically certain. The Order of the Hospitallers was even more closely associated with the scene of our Saviour's life and sufferings than that of the Templars, and would be just as likely to take the church of the Holy Sepulchre at Jerusalem as a model for the church of the Grand Priory at Clerkenwell as the Templars for theirs near Fleet Street.

The round church of Little Maplestead is thought to have been erected by the Hospitallers in or soon after 1185, in which year the manor of Little Maplestead was granted by Juliana d'Oisnel to that Order, and became the seat of one of its commanderies. (*Vide* Wallen's "Round Church of Little Maplestead," p. 126.) No connection, it seems, can be established between the round church of St. Sepulchre's at Northampton and either the Templars or Hospitallers. Rumour would have it that St. Sepulchre's at Cambridge (attributed to the reign of Henry I.) was founded by the Templars; but the best known archæological writers of Cambridge do not support this view. Conybeare, in his "History of Cambridgeshire," p. 110, treating of "The Round Church of the Holy Sepulchre," has the following note:—"Charter Nos. 73 and 75 of the Ramsey Chartulary (Vol. I., p. 145, A.D. 1114-1130) grant to Ralph cum Barba of Camb. and other of the Fraternity of the Holy Sepulchre the cemetery of St. George and the land adjacent to build them a minster in honor of God and of the Holy Sepulchre." Who were this "Fraternity of the Holy Sepulchre"? (*N.B.*—The "Hist. Ramsiensis" is repeated in the Liber Eliensis.)

I am indebted to Mr. H. W. Fincham, the churchwarden of St. John's, Clerkenwell, for the following description of the crypt and churches of the Grand Priory of the Order at Clerkenwell, and account of the result of the excavations in May, 1900:—

"The crypt beneath the original choir consists of a nave of five bays, together with transepts at the extreme east end and north and south aisles; the three westernmost bays of the nave are early Norman, built probably between the years 1080 and 1090. Small, round arched windows occur on both sides of each bay, and a stone bench against the walls surrounds the whole of this earlier work. The two eastern bays of the nave, together with the transepts and south aisle, have deeply moulded pointed arches springing from triple-clustered columns of transitional character. The south aisle extends two bays eastward from the transept. All that now remains of the north aisle consists of two

small chambers with plain barrel vaulting, opening by a doorway from the north transept. The westernmost of these two chambers appears to have formed a chapel, as it has the remains of an east window with an aumbry on either side.

"The principal dimensions of the crypt are as follows:—The total length of the nave is 62 feet 2 inches, and its width 16 feet 3 inches; the extreme length of the transept is 51 feet 2 inches, and its width 11 feet 4 inches; the height from the floor to the centre of the arches is 12 feet.

"The choir of the church—now the Parish Church of St. John, Clerkenwell—still shows the original east and south walls, with windows which were put in by Prior Docwra about 1500. Between the pews can be seen the bases of the columns of the church, which was consecrated by Heraclius in 1185. The west wall is that built by Prior Thomas Tresham, when Queen Mary reconstituted the Priory after the nave had been destroyed by Lord Protector Somerset.

"Present excavations outside the west end of the choir have disclosed the base and plinth of a wall which forms upon plan a portion of a circle having a diameter of about 49 feet 6 inches. The diameter of the Temple church is 58 feet, and that of Little Maplestead 29 feet 6 inches. These churches were built and consecrated about the same time as that of St. John. From the appearance of this wall, there can be little doubt that the original nave of the Priory Church was a round church, as that of the Temple Church is at the present time. The masonry is in a perfect state of preservation, the tooling of the stone surface being almost as clean as when it was cut some years before the consecration in 1185. The mason's mark is perfectly distinct. The lower course of masonry consists of a chamfered plinth upon which the original floor line is still apparent. Built upon the ruins of this circular wall were found masses of rubble masonry of a later date, but with no worked stones to aid in fixing its period. It is probable that the round church stood until the attack upon the Priory by Wat Tyler in 1399, when much of the Priory was destroyed by fire, 'causing the same to burn for the space of seven days after.'

"This necessitated a new church, and the nave was rebuilt in the prevailing fashion of the time. The arrangement of the original church of the Priory appears to have been a circular nave, with a long choir of four bays raised 5 feet 6 inches above the floor of the nave, and connected with it by a broad flight of steps. Beneath the choir, and covering the same area, was the crypt, entered by a small door and by a flight of steps 7 feet 9 inches in height, on the north side of the steps leading from the nave into the choir. The jambs of this door and the fragments of the circular walls of the nave will be preserved intact, and exposed to view for the future."

At the conclusion of the anniversary service of the Order of St. John on 25th June last, the Rev. T. W. Wood, rector of St. John's Church,

CRYPT OF THE PRIORY CHURCH AT CLERKENWELL, AS SEEN TO-DAY.

MONUMENT TO THE LAST GRAND PRIOR (DIED 1540), SIR WILLIAM WESTON, IN ST. JAMES' CHURCH, CLERKENWELL.
(As it was originally.)

Clerkenwell, showed the members of the Order the result, up to date, of the recent excavations and researches, and read to them a paper dealing with this subject, which is one of great interest, both from an archæological and historical point of view. Further research is to be made under the auspices of Dr. Edwin Freshfield, and when that is completed we may hope to learn much about the original Church and Priory of St. John, which has for some centuries been lost to view.

APPENDIX III.

Some Recent Developments in Field Ambulance Work.

It has been stated by reliable authorities—notably by Sir William McCormac and Mr. Treves, and also by Sir Howard Vincent in the June number of the R.U.S.I. Journal (p. 611)—that the hospital and ambulance arrangements in the South African War are better than they have ever been before. In such a campaign there has been ample scope for inventive genius, and, as might be expected, several new inventions and experiments have been made. The Mounted Field Hospital, manned and equipped by the Volunteer Army Medical Corps of (I think) Manchester, Glasgow, and Bradford, is the first Mounted Field Hospital ever sent into the field. It is well suited for work with mounted troops. Promptitude and rapidity in rendering "First Aid" to the wounded have been marked features in this campaign, and to that end several new inventions tend; notably, the Manders' Flying Hospital and Flying Ambulance Cars. The ordinary ambulance carriage is as cumbrous and slow of motion as is the regulation doolie in India. Mr. Horace Manders, F.R.C.S., who is serving in South Africa as the medical officer of the 12th Battalion of the Imperial Yeomanry, designed two lighter vehicles, and Messrs. W. C. Windover, Turrill & Sons, of Long Acre and South Audley Street, built them after his designs. I am indebted to this firm for my information and for photographs of the cars. The Flying Hospital Car is built to carry eight slightly wounded men, each man being strapped in, in a sitting position. The seats were at first made to face outwards, as in an Irish car. In the newest pattern they are made to face inwards. The interior is fitted with all "First Aid" appliances. The companion to this is the Flying Ambulance Car, which carries six men strapped on stretchers. It has no "First Aid" appliances. Both these vehicles move at a gallop between the scene of action and the dressing-stations or field hospitals. They can accompany mounted troops in action. The *Daily Graphic* of 21st April had one or two illustrations of these cars at work in the field. They may be looked upon as a development of the Ambulance Tonga which has, for at least some years past, been in use with the Army in India. These are now and have for some time past been used with cavalry on field days and at manœuvres, and during the Tirah Expedition were used to convey sick and wounded men from the front to the base. It stands to reason that severe cases should only be removed in them in an emergency or for short distances.

It is stated that twenty of these Ambulance Tongas, twelve large with stretchers, and eight small without stretchers, with fifty horses and harness and equipment complete, were sent in February last from Calcutta to South Africa for service with our troops there, being a gift to the Army from a loyal and generous Parsee gentleman. With the very large body of mounted troops (cavalry, infantry, and artillery) that we have in the field in South Africa, such a gift would be a welcome and timely one. The name of the donor (unknown to me) merits to be associated with those of the many others who, under the Red Cross Committee, have done so much for the welfare and comfort of our wounded and sick in South Africa.

I will venture to quote here one of the many testimonies that have been borne to the good and noble work done in South Africa by the men of the R.A.M.C. and the St. John Ambulance Brigade. It is an extract from a letter by Rev. H. J. Rose, Senior Chaplain to the New South Wales contingent, dated Orange River, 29th March, 1900, and quoted in the *Times* of 14th May:—"I have just received from the British Cross Society a consignment of books, games, etc., which I am now distributing among the patients of this hospital. . . . I am not sure that the work of the hospital orderly is sufficiently appreciated. . . . I have seen and known orderlies in the hospital who have literally laid down their lives for their brethren. They have worked night and day, with only snatches of rest, cheerfully and thoroughly doing their trying and often loathsome work; then they have caught the fever in the way it can be caught. We have had many of these men laid up in hospital, both R.A.M.C. and St. John of Jerusalem men . . . Since I have been here—between four or five weeks—four of them have died in hospital of enteric fever. We should like their fellow countrymen to feel that these men have died for Queen and country, that they have shown no common example of self-sacrifice and heroism, that such exploits as theirs—performed under no stress of excitement against an invisible, subtle, and terrible foe—may well rank with the most brilliant exploits for which their comrades have been distinguished at the front."

Sir William McCormac, President of the Royal College of Surgeons, speaking at a public dinner on the 18th June, stated that "Up to the 9th of June there were in South Africa 475 officers of the R.A.M.C., and 380 civil surgeons—in all 855 doctors. There were also 666 female nurses and 5,668 male nurses (*i.e.*, hospital orderlies)." Of the hospital orderlies about 4,000 only belong to the R.A.M.C. The remainder, together with a very large proportion of the female nurses, were sent out by the Red Cross Committee. Thus nearly half the doctors and one-third of the nurses and orderlies employed in South Africa have been provided from private sources. To provide this aid was unquestionably the duty of the Empire; but these facts and figures prove how dependent the Army Medical Service is, in time of war, on aid from civilian surgeons and private ambulance and hospitaller societies. The provision of this aid on this liberal scale is one of the new and best features of this war.

In the *Standard* of the same date (18th June), Sir John Furley bore witness to "The daily and continuous assistance which has been rendered by ladies, who have for a long period devoted their kind energies to unpacking and sorting and distributing the tons of clothing and comforts which have passed through their hands for the sick and wounded. Of this help I may be allowed to express an opinion, as it has so materially contributed to any success which I and my colleagues have had in the impossible duties we have endeavoured to fulfil."

It is perhaps to be expected that the great and good philanthropic work, of which Miss Florence Nightingale was the pioneer, may occasionally suffer from an excess of zeal, or from the advent on the scene of work of persons unqualified to be of real use. Sir John Furley, however, has shown that in war there is ample work even for those who are not experts in nursing. Willing hands and hearts can always make themselves useful.

On 26th June, I met one of the Service Members of Parliament. He spoke to me about the convalescent home for soldiers supported by his constituency, and added "I could not but notice how unanimous the sick and wounded soldiers were in their praise of the St. John Ambulance orderlies."

APPENDIX IV.

Ambulance Work in War.

Probably few persons realise how comparatively modern a thing is the systematic collection and skilled treatment of the victims of war. It is true that surgeons and doctors accompanied the armies of ancient Greece on active service, but the first idea of an ambulance train proper would appear to have originated with the Romans, for not only were the Roman legions provided with doctors and even bearers, but they had a sort of mobile hospital, called the "Valetudinarium," whose special mission it was to minister to the needs of the wounded after the fashion of the field hospitals of to-day. With the decay of classic civilisation, however, all such refinements vanished and were speedily forgotten; in fact, it was not until the close of the sixteenth century that military hospital arrangements were revived by the French, who, indeed, to their everlasting honour, have been the pioneers of the civilised world in this respect. In 1590, during the siege of Orleans, Sully ordered the erection of camp hospitals for the reception of his wounded. Up till then the majority of the wounded were either carried to the rear by their comrades, or left to lie exposed to all risk, and unheeded until after the fighting had ceased. Warriors of consequence were, it is true, somewhat better off, for these as a rule included a surgeon, in personal attendance, in their suite; but the rank and file may be said to have been left to die where they had fallen. Richelieu further developed the work of his predecessor, organising military hospitals on a large scale, and placing them under the control of a military medical administrator.

The example thus set by the French Armies was gradually imitated elsewhere, so that by the end of the seventeenth century the institution of military hospitals among besieging forces, or troops that remained more or less stationary, had been permanently adopted. During the Marlborough campaigns, the French again gave proof of their humane anxiety to alleviate the horrors of war, and there then appeared, for the first time in history, heavy four-wheeled wagons on the battle-field itself, whose sole duty it was to collect the wounded, and remove them to the rear with all possible despatch. These were the first ambulances, in the modern sense of the word, and each contained a detachment of non-combatants, to carry out their laudable object. For a period of close on one hundred and fifty years following their inception, however, the French was the only Army to make use of them. The next forward move in the merciful direction occurred at the commencement of the Dettingen Campaign of 1743, and this time the credit rests with an Englishman. Sir John Pringle, physician to the Earl of Stair, commanding the British forces on the Continent, induced the Earl to propose to the French commander, the Duc de Noailles, that military hospitals on either side should be regarded as neutral, and be mutually protected. The Duc assented, and this humane practice was observed throughout the campaign, and subsequently became the universal custom in European wars. In the year 1792, a young surgeon, named Larrey, joined the Army of the North, and in its early battles was much impressed by the fact that, excellent as were these new arrangements, they were on a totally inadequate scale. Accordingly, he in his turn set about improving the system in vogue, inventing a more suitable pattern of mobile ambulance, and attaching a complete field hospital to each division.

During the Peninsular War the want of a trained ambulance corps and of properly constructed sick transport carriages, each of which the French Armies possessed, formed a theme of constant complaint. For the former, soldiers from the ranks were substituted—a double evil, as they were unsuited for the work, while their employment lessened the fighting strength. For the latter, commissariat wagons, or the agricultural carts of the country in which the troops were operating, were employed. It was not from want of attention being called to the subject, as the writings of Sir J. M'Grigor Millington and other Peninsular surgeons testify. Millington, indeed, published a very complete scheme of an ambulance establishment shortly after the war was concluded. There is reason for believing that had the operations of the British troops on the Continent been continued, some plan of this kind would have been introduced. As it was, after 1815 nothing was done for our army hospitals in the field, and the wars that our troops were engaged in in India, China, South Africa, etc., did not lead to improvements like those in progress in Continental Armies, since the climate, state of the country, and conditions of labour all necessitated special arrangements unsuited for meeting the circumstances of European warfare. Thus, when the Crimean War broke out the English Army was still without an ambulance corps or an establishment of *matériel*, whereas the French Army was,

comparatively speaking, very fully equipped in both respects, and had moreover, thanks to its Algerian experiences, introduced an alternative method for the transport of wounded by the aid of cacolets and mule litters. The Government hastily raised an ambulance corps of military pensioners, but this failed from the habits and enfeebled constitution of the men. It was succeeded by a corps of civilians, unused to the customs of military life and any form of discipline, which likewise failed. Finally, the sick and wounded had to be carried by sailors in hammocks, in ordinary transport wagons, and in ambulances borrowed from the French. On the battle-field itself bandsmen were alone available to carry away their wounded comrades; but for long there were no stretchers forthcoming to aid them in their work.

Admirable as had been the French hospital arrangements in the Crimea, the system utterly broke down during the war in Italy in 1859, owing to the large number of troops employed, which entirely overtaxed resources. It was the horrors of Solferino which inspired an eye-witness, in the person of M. Moynier, of the Swiss Republic, with material for his agitation that resulted in the Geneva Convention of 1864. Great improvements were made in the equipment of ambulances by the Americans in the Civil War, particularly from March, 1864, when an Act was passed by Congress fixing a definite and single system of ambulance arrangements for all the armies of the United States at that time in the field. These same excellent principles were adopted by the Germans and used by them with great success in the war of 1870. They proved superior to the French, owing to the circumstance that the German medical staff possessed complete autonomy, a system which the French adopted when re-organising their forces after the struggle. This brings us down to the commencement of modern ambulance organisation, the subsequent evolution of which, to keep pace with the growth in national armaments, it would be impossible to touch upon in this paper. Suffice to say, that it now represents a vast, complicated, and highly-trained administration, entrusted with the control of the numerous temporary establishments instituted close to an army in the field, for the collection, treatment, and discharge, or return to duty, of sick and wounded.—*The Globe*, 21st March, 1900.

APPENDIX V.

The Herbert Hospital.

The Herbert Hospital, which Her Majesty has just (in March) visited, had its origin in the Barrack and Hospital Improvement Committee of 1858. This committee reported that the Garrison Hospital at Woolwich was over-crowded, 529 patients being in the building at the time of inspection, whereas it only contained accommodation for 304. In the year 1859, when Lord Herbert, then Mr. Sidney Herbert, came into office as Secretary of State for War, the number of the sick amounted to 579, and

it was necessary to put up marquees in the grounds for the accommodation of those that the hospital could not contain. After much consideration it was found impossible to convert the existing building into a good hospital according to modern principles of construction. Lord Herbert therefore decided to convert the old building into a barrack, and to erect a new hospital, designed upon the principles laid down by the Barrack and Hospital Improvement Committee. This work was entrusted to Sir Douglas (then Captain) Galton, Assistant Under-Secretary of State for War, who designed all the plans and arranged every detail of the hospital. The plans were examined by Lord Herbert, and submitted to Miss Nightingale, whose practical experience was of the greatest assistance.

The Barrack and Hospital Improvement Committee claimed to have embodied in Sir Douglas Galton's design for the construction of the Herbert Hospital all the best points in the best existing military hospitals both at home and abroad. In the Herbert Hospital for the first time provision was made for 650 patients, the building being divided into separate pavilions, each no larger than a regimental hospital, and each combining all the sanitary advantages of a small regimental hospital. In this building Lord Herbert, Sir Douglas Galton, and Miss Nightingale were able to illustrate and carry out their views on hygiene and on all sanitary improvements, and the result of their work, after nearly thirty years, has shown how wise their decisions were. Sir Douglas Galton's improvements in the sanitary conditions of the life of the soldier, founded as they were upon scientific principles, have not only been evidenced by the decrease of mortality in barracks and hospitals in England and her Colonies, but in the diminished mortality of her soldiers in the field. A strong proof of the truth of this has been given more than once by the reports from South Africa, which have dwelt upon the altered conditions of the soldier and of his health and his habits whilst on active service, as compared with the Crimean War, owing to the regulations introduced and enforced by the Army Sanitary Department.

It is with almost pathetic interest that we mark that the Queen is now for the first time to visit the Herbert Hospital, which was connected with three persons who were linked together not only in the important work of the sanitary improvement of the Army, but with ties of strong friendship. Lord Herbert has long since passed away, and this month marks the first anniversary of the death of Sir Douglas Galton, the designer of the hospital; Miss Nightingale is the only remaining link, and she is too ill to be present at a function for which they had all ardently longed. It had been the earnest wish, especially of Sir Douglas Galton and of his cousin, Miss Nightingale, that they should have the invaluable sanction and the glorious halo of a visit from Her Majesty to crown their work.—*Times*, March, 1900.

APPENDIX VI.

The Importance of Good Stretcher-Bearers.

We want in India a body of hospital bearers who can be relied on to be staunch in danger. At present, when war breaks out, extra dooliebearers (*alias* Kahars) are enlisted from anywhere. What such men are worth is shown by the way in which they deserted our sick and wounded in the Bara Valley march on the 11th December, 1897. British officers and soldiers had then to take up the sick and wounded abandoned by these "sweepings of the bazar," and carry them on into camp to save them from the merciless Afridi. If we had reserve corps of stretcher-bearers, trained in peace-time by native chiefs, or missions, or by any private body or association, these corps would have a pride, cohesion, discipline, and *esprit de corps*, that would make them staunch to their duty, and a really valuable assistance to the Army Medical Service, which in time of war finds itself very short-handed. The Imperial Service Transport Corps of the Jaipur State is the type of what an Imperial service ambulance corps might be made by any native chief under competent guidance. During the famine of the past nine months the Jaipur I.S.T. Corps has been used as an ambulance corps to bring into the relief-centres the diseased, emaciated, and weakly victims of the famine. This is a further proof of the value of the maintenance of such corps in native States for use in any emergency.[1]

In the *Pioneer Mail* for 27th April, 1900, appears the following editorial paragraph, which entirely bears out what I have represented:—

"Repeated references have been made in the Press to the corps of stretcher-bearers employed in South Africa. These men are largely natives of this country (India), as untrained to ambulance as, for instance, the field hospital *Kahar* of the Indian Army; and yet they appear to have been of the utmost value in the transport of wounded. In a recent description of the retirement and withdrawal of the wounded from Spearman's Hill to Frere, Mr. Treves, one of the consulting surgeons with the forces, reports that a convoy of 150 wounded were carried a distance of 25 miles by hand on stretchers. These were not mild cases; in fact, he says, 'all of them would be described as serious.' He goes on to compare this, than which 'no more perfect way of carrying the wounded exists,' with the jolting ambulance wagon, which in some cases has proved to be literally fatal. The idea of carrying wounded on field-stretchers is not unknown in India. Every battalion and every regiment of cavalry is supplied with them, but in strictly limited numbers, and no provision, other than the employment of fighting men, is made for carrying them. Our

[1] **The Maharajah of Gwalior has just given twenty lakhs of rupees to fit out and maintain a hospital-ship for duty with the expedition to China. This will doubtless prove to be the first of many similar generous and philanthropic acts in aid of ambulance work by the native chiefs of India.**

experience of this war has shown what casualties may be expected in any modern engagement; and it must be obvious that in India the existing ambulance arrangements are lamentably deficient in point of quantity. A large number of *Kahars* are maintained in peace, and hundreds more are swept in from the bazars as each field hospital is mobilised; but after all, a field hospital can only carry twenty lying down cases in as many doolies, a small enough allowance for a regiment, to say nothing of half a brigade. To carry these twenty cumbrous and unsatisfactory machines at least six bearers each are required, with a good surplus in reserve. It would be equally simple and far more satisfactory if corps of stretcher-bearers, or the *nuclei* of such corps, were maintained and trained in peace-time in big stations, and the units expanded indefinitely in time of war."

This candid and unbiassed testimony from one of the foremost journals in India gives some idea of the defective condition of the ambulance service and equipment of the Army in India. The remedies, however, suggested by the *Pioneer* by no means meet the case. Nor is the statement that the Natal Ambulance Volunteers were perfectly "untrained" correct. Some were certainly trained at the St. Aidan's Mission at Pietermaritzburg.

To the above let me add the testimony of the *Times of India* (weekly edition of June 16th, pp. 2 and 14). From a long article on the "Indian Ambulance Corps in Natal" I will make one brief quotation :—

"Full three weeks were thus passed (in Sir Redvers Buller's camp) in almost continuous work emptying one hospital after another, chiefly the stationary hospital. During the time five journeys were made to Frere, the men three times carrying the wounded the whole distance of 25 miles in a single day. It was freely remarked, each time the 'light-footed elastic-stepped' bearers covered the whole distance of 25 miles with their charge under a trying sun and over a difficult road, that they alone could perform the feat; 100 miles in five days may be accounted fairly good walking for a man unburdened with any weight but that of his own carcase and clothes. When wounded have to be carried on stretchers for nearly half that distance, and the greater portion of the remainder is traversed by men laden with heavy kit, such marching, I think, will be acknowledged as very creditable work. Such is the feat lately performed by the Indian Ambulance Corps, and one that any body of men may be proud of."

This shows what admirable material for ambulance work we have ready to our hand in India. It remains for the dominant race there to train and use it. Be it noted, too, that the Natal Indian Ambulance Corps was a Volunteer corps in every sense of the word "Volunteer."

FROM ENSLIN TO BLOEMFONTEIN WITH THE 6TH DIVISION.

By Major J. E. CAUNTER, Lancashire Fusiliers, D.A.A.G., 6th Division.

THE dark cloud that had hung over the British Army and the British Empire since the week of Stormberg, Magersfontein, and Colenso, was still black and lowering on the morning of the 11th February, 1900.

It is true there had been an occasional break in the gloom, and that signs were not wanting that better things were in store for the sorely-tried nation. The master hand that was to finally dispel the cloud had arrived on the scene, and had been busily arranging plans and re-establishing confidence. The sons of the Empire had answered the call to arms with no uncertain voice. From Australia, Canada, New Zealand, Ceylon, Natal, Cape Colony, India, came the demand that they should be permitted to show the world that it was not only in fair weather and under bright skies that Anglo-Saxons stood by each other.

But it was not until the 11th February that the impatient watchers at home began again to gather hope that our arms would assert their supremacy. From that date there was no looking back. The wide turning movement south and east of Jacobsdal, the seizure of Waterval, De Kiel's and Klip Drifts, the brilliant dash on Kimberley, the cutting of Cronje's communications, followed one another in quick succession. Then came the pursuit of Cronje's hitherto triumphant force, the rear-guard action at Klip Kraal, the surrounding of the Boer laager at Paardeberg and its surrender ten days later, the engagement at Poplar Grove, the defeat of the Boer Army at Driefontein, whereby the Orange Free State capital was laid open to our advance, and, finally, the occupation of Bloemfontein itself.

Thus between the 11th February and the 12th March the whole position had been reversed in the western theatre.

And the effect of these successes was not confined only to the Free State. Immediately the news reached Ladysmith that Cronje was in peril, large numbers of burghers were sent by rail to Bloemfontein and thence eastward to his assistance. From information gathered from some of these, who were captured near Kitchener's Kopje during the investment of the laager at Paardeberg, the actual numbers were probably between 7,000 and 8,000. Similarly in the central theatre, the pressure on Clement's retaining force at Arundel was at once relieved, and at least 3,000 to 4,000 were moved partly by rail, and partly across country by Jagersfontein and Koffyfontein towards Paardeberg.

Strategically, the movement that ended so successfully in the occupation of Bloemfontein was as brilliant as it was sound.

It was the good fortune of the 6th Division to take a no inconsiderable part in this work within a month of its arrival in South Africa.

The infantry of the Division consisted originally of the 12th Brigade under Major-General Clements, and the 13th Brigade under Major-General C. E. Knox. Owing, however, to the necessities of the moment the 12th Brigade was at once pushed up to reinforce General French before Colesberg, and when the remainder of the Division was moved by rail to Modder River station the 12th Brigade were replaced by the 18th under Major-General Stephenson, made up of battalions at first detailed for duty on the lines of communication. Of these the 2nd Bn. Royal Warwickshire Regiment did not join the Division until after the latter's arrival in Bloemfontein.

By the evening of the 11th February, 1900, the 12th Brigade had concentrated at Enslin and the 18th at Graspan. On this day the cavalry and mounted infantry pushed on to Ramdam followed by the 7th Division.

COMPOSITION OF THE 6TH DIVISION.

In command—Lieut.-General Kelly-Kenny, C.B.

A.D.C.'s.—Captain Booth, the Buffs; Captain Maurice, Derbyshire Regiment.

A.A.G. and C.S.O.—Colonel Goldsmid.

D.A.A.G.'s.—Major Monro, the Queen's; Major Caunter, Lancashire Fusiliers; and Major Webb, Army Service Corps.

C.R.A.—Lieut.-Colonel McDonnell.

C.R.E.—Lieut.-Colonel Buston.

P.M.O.—Lieut.-Colonel Gubbins.

A.P.M.—Major Wilkinson, King's Own Scottish Borderers.

M.O.—Major Skinner.

Brigade Signalling Officer—Captain Burnett-Stuart, Rifle Brigade.

Chaplains—Rev. F. Norman-Lee and Rev. J. Blackbourne.

13TH BRIGADE.

In command—Major-General C. E. Knox.

Brigade Major—Captain Thompson, Loyal North Lancashire Regiment; A.D.C., Captain Marescaux, Shropshire Light Infantry.

2nd Battalion the Buffs—Lieut.-Colonel Hickson, 18 officers, 786 N.C.O.'s and men.

2nd Battalion Gloucester Regiment—Lieut.-Colonel Lindsell, 23 officers, 716 N.C.O.'s and men.

1st Battalion West Riding Regiment—Lieut.-Colonel Lloyd, D.S.O., 23 officers, 789 N.C.O.'s and men.

1st Battalion Oxfordshire L.I.—Lieut.-Colonel Hon. A. Dalzell, 20 officers, 595 N.C.O.'s and men.

18TH BRIGADE.

In command—Major-General T. E. Stephenson.

Brigade-Major—Lieutenant Pratt, Essex Regiment; A.D.C., Lieutenant Howard, Essex Regiment.

1st Battalion Yorkshire Regiment—Lieut.-Colonel Bowles, 21 officers, 953, N.C.O.'s and men.

1st Battalion the Welch Regiment—Lieut.-Colonel Banfield, 23 officers, 875 N.C.O.'s and men.

1st Battalion Essex Regiment—Major Brown, 23 officers, 936 N.C.O.'s and men.

BRIGADE DIVISION R.A.

76th Battery—Major Harrison.
81st ,, ,, Chapman.
82nd ,, ,, Pratt.
38th Field Company R.E.—Major Roper.

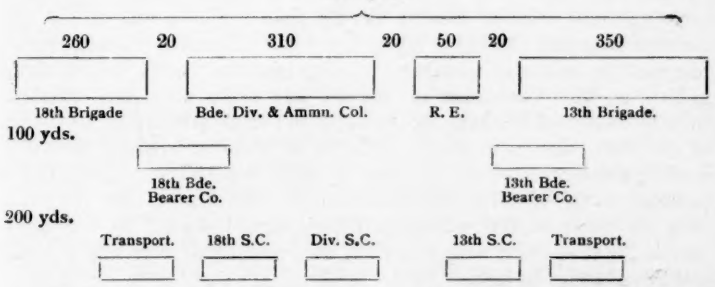
No divisional cavalry were yet allotted.

At dawn on the 12th the brigades moved off from Enslin and Graspan respectively, marching on a broad front in a direction slightly south-east on Ramdam, where there was a good supply of water from a large dam and a well at the farm-house. After leaving the kopjes occupied by the Boers in the engagement of Enslin-Graspan, the open veldt was reached. Here the going for the most part was good, the only hindrance to rapid marching being the occasional presence of dry pans, where the sandy soil was heavy, and dongas, which, owing to the lateness of the rainy season, were at this time devoid of water.

The 13th Brigade having a rather shorter distance to cover arrived at 1 p.m., followed about half-an-hour later by the 18th. The distance marched as the crow flies was 10½ miles.

The division bivouacked near the dam, and the outposts were pushed forward to a ridge about half-a-mile to the north-east.

The normal formation adopted for the bivouac throughout the march was:—



The field hospitals were placed in suitable positions varying with the nature of the ground.

The head-quarters were usually at the farm-house, almost invariably found near the water, which decided the halting place.

The Royal Engineers were frequently bivouacked near the water supply.

The Commander-in-Chief arrived at Ramdam in the afternoon, and information having been received that the cavalry had seized Waterval and De Kiel's Drift on the Riet, orders were issued for a start to be made early next morning for the former. At 5 a.m. the Division moved off, halting for an hour at a dam some 6 miles from the start. Here the water had been much fouled by the troops passing earlier, and the bottom of the dam was found to be very soft and holding. Some horsemen pressing too eagerly to the dam to water their animals consequently indulged in an involuntary bath, much to their own disgust and the amusement of the more cautious.

Shortly after leaving this spot the destination of the Division was changed to Waterval Drift, about 3½ miles north-west of De Kiel's. On arriving, the drift was found to be a difficult one for carts and wagons, and the transport of the mounted infantry had not yet cleared. The infantry were, therefore, directed to cross higher up the stream, refilling their water-bottles in doing so, and were bivouacked by 12 noon on the north-east side, leaving the transport to negotiate the drift later. The distance covered on this day was between 10 and 11 miles.

That night the troops had their first experience of a South African storm, which, however, was mild compared with those afterwards met with at Paardeberg and Osfontein.

All were in good spirits when a start was made at 1 a.m. for Wegdrai on the 14th, and few imagined that before the dawn of another day they would have completed perhaps the hardest march of the campaign, and would have come up with the cavalry and established themselves on the River Modder at Klip Drift. The direction of the march was practically due north with the Riet on the left flank throughout. The rate of marching during the darkness was very slow, and although after daybreak a better pace was maintained, it was not until 11 a.m. that the farm of Wegdrai was reached. The distance in a direct line was about 10 miles, but this must have been greatly exceeded in going round kopjes, and avoiding heavy ground. During the day-time the heat was intense, but the men struggled pluckily to the end, and looked forward to a well-earned rest until the following morning. The Division had hardly settled down in bivouac, filled water-carts and bottles, and made what poor attempts they could to cook the meat by the aid of the scrub growing on the banks of the Riet, than commanding officers were asked whether their men could make another effort, as it was of great importance to push on, if possible, to the Modder River that night. The answer was the same from all: the men were undoubtedly done up and wearied by the night march, but if an effort were called for, they would guarantee that it would not be called for in vain.

Accordingly, after 3 hours' rest a fresh start was made. The direction was now N.N.W., leaving the village of Jacobsdal about 3½ miles on the

left. Parties of the enemy were seen in the neighbourhood, but were driven off by a few volleys. Good progress was made whilst daylight lasted, but as fatigue began to tell, frequent halts became necessary, and the pace slackened. To add to the hardships heavy rain came on about 9 p.m. At each halt the men fell rather than lay down, and were asleep almost before they touched the ground. Many declared they slept as they marched. From point to point the distance from Wegdrai to Klip Drift is only 12 miles, but, including detours, the column had covered at least 15, when at last, soon after midnight, footsore and weary, but game to the end, it reached its destination. From 1 a.m. on the 14th to 12.30 a.m. on the 15th, the Division had marched between 27 and 28 miles. During the latter part of the journey the flash light at Kimberley could be plainly seen to our left front, and some of the private messages caused considerable amusement.

The Division bivouacked south-east of the Drift, and the remainder of the night, which was bitterly cold, will not readily be forgotten by those who lay on the damp veldt with no protection beyond what they had carried on their backs throughout the trying march.

At Klip Drift we came up with General French's cavalry and mounted infantry, and on the morning of the 15th took over the outposts, and defences of the Drift. About 9 a.m. the cavalry started on their way to Kimberley, and the movement was supported, for a short distance, by the batteries of the Division.

During the day a little desultory fighting went on north of the river, but the majority of the troops were given a well-earned rest after the fatigues of the 14th.

Several prisoners were brought in, and useful information gathered from them. The Boer prisoner appears, at first, an excellent medium for the collection of intelligence. He is anxious to tell all he knows, and is rarely at a loss for an answer; he has never taken part in the fighting, but invariably belonged to the commissariat or transport, or has been a despatch rider; he has always been opposed to the war, and feels certain that the majority of the burghers are sick of it, and are only too anxious to discover a pretext to return to their farms; his countrymen have suffered terribly since October, are short of sugar and coffee, and their ponies are in bad condition; they have no confidence in their leaders. He is usually prepared to give you the numbers and movements of any particular commando or force.

The native deserter from the Boer laager, on the other hand, is quite helpless when interrogated as to numbers, knows nothing of intended movements, but has in all cases been cruelly illused by his late masters, and is quite ready to show you the marks of his ill-treatment. How much, or rather how little, to believe, and what deductions to draw from the tissue of falsehoods poured hourly into his ear by these precious informers, is the not too easy task of the Intelligence Officer.

The native on the whole, however, was found fairly reliable on topographical matters, his statements as to the direction and nature of roads, and the practicability of drifts, etc., generally proving accurate.

As to the Boer, the best plan undoubtedly was by judicious questions to get from him all he seemed so eager to tell, to affect to believe anything and everything, to sympathise with his lacerated feelings at being separated from his family, and then to credit only what agreed with known facts, or was corroborated by other and more reliable intelligence. The "slim" look that would flash, ever and again from the cunning eye, was often an excellent guide as to the reliability of the statement.

From the kopjes north of the drift two Boer laagers could be seen, one some 4 miles the other perhaps 10 from the outposts. At dawn on the 16th General Knox, with the 13th Brigade, mounted infantry, and a battery, was ordered in a northerly direction to ascertain if these were evacuated, as was reported by native deserters, and to search the country generally in that neighbourhood. But the bird had flown. As soon as daylight enabled those assembled on the high ground above the drift to search the surrounding country with their glasses, clouds of dust were seen rising about 4 or 5 miles to the north-east. The right conclusion was at once arrived at. Cronje had, at last, understood his peril, and with the whole, or greater portion of his force, had slipt past in the night within a few miles of our outposts. Prisoners at Paardeberg afterwards told how shortly after noon the "hero of Potchefstroom" had summoned the field cornets, and after explaining the situation, had ordered a retreat on Bloemfontein to commence at dusk.

General Knox was at once ordered in pursuit, a portion of the mounted infantry along the south side of the river, the 13th Brigade, 81st Battery, and remainder of the mounted infantry along the north side. The first-named, unable to find a drift further up the river, were obliged to return and cross at Klip Drift.

Commandant Roos was in charge of the Boer rear guard, and admirably he carried out his task. About 12 noon, after holding for a short time the kopjes north of Drieputs, he retired to a strong position near Klip Kraal Drift. Here he succeeded in checking the pursuit until dark, and during the night Cronje continued his retreat eastward. Although General Knox's troops failed to carry Roos' position, and had suffered a loss in killed and wounded of 6 officers and 119 N.C.O.'s and men, they had rendered invaluable service in retarding the Boer retreat, and to a great extent this engagement made possible the eventual enclosure of Cronje's army in the river bed at Paardeberg.

The Boer loss could not be ascertained, but was probably considerably less than our own. On one kopje we found 4 dead burghers and 6 or 7 wounded. One of the latter was an Aberdeen man of about 50 years of age, who had served in the 4th Pioneers under Colonel (now Major-General) C. E. Knox in the Bechuanaland Expedition, 1884-85. Being an Orange Free State subject at the commencement of the war, he had been commandeered against his will, and forced to join the commando of F. Wolmarans. There were, he stated, several men in Cronje's force in the same position as himself, of whom the Boers were very suspicious, and who, in spite of the risks they ran,

had never sent a bullet in the direction of their old fellow countrymen. He gave us much valuable, and as proved later, accurate information of the enemy's numbers and guns, and was one of several who spoke of the fear the Boers had of our shrapnel, and the comparatively harmless effect of lyddite. Poor fellow; we did our best to bind up his wounds; he was shot through the leg, and after he had emptied two or three of our water-bottles we left him, he said, quite comfortable.

On this kopje we found small heaps of Mauser ammunition, and in some instances boxes, placed on the ground in the positions occupied by each group or individual.

At 3 a.m. on the 17th, the 18th Brigade, which had been holding the drift during the 16th and furnishing the outposts north of the Modder, followed the 13th Brigade but marching on the south bank of the river, and at 12.30 p.m. both Brigades were at Brandvallei, 11 miles east of Klip Drift. Here we learnt that Cronje's force had passed this point early that morning and could not be far ahead as his oxen were exhausted, consequently the Division moved off again at 5 p.m. with orders to secure Paarbeberg Drift (4¼ miles). On reaching the Petrusberg-Paardeberg Drift road, however, a request was sent back by Lord Kitchener, who had ridden on in advance with the mounted infantry, that we should continue our march parallel with the river instead of striking the Drift. At 9.30 p.m., having covered 16 miles, the Division bivouacked on the veldt. On the morning of the 18th at 3 o'clock we were again under arms. At first, Cronje's laager not having as yet been located, the order was given to march on Paardeberg Drift as originally intended, but hardly had this movement commenced than Lord Kitchener arrived with the intelligence that the whole Boer force was at that moment laagered at Woolveskraal, not 3 miles distant.

The head of the column was at once turned again north-east, and at 6 a.m. we had the satisfaction of looking down on our quarry, run to earth at last. Indeed his position, unless aid came to him from the east, was from the first a hopeless one.

From Paardeberg Kopje to Koodoesrand Drift the river was commanded by high ground on the north side, gently shelving to the banks of the stream. On the south a series of kopjes from the Petrusberg road to Kitchener's Hill, and the high ground about Osfontein Farm offered exceptional facilities to a force strong in artillery, whose object it was to hem in an enemy located in the river bed below.

General French with the cavalry had arrived on the afternoon of the 17th, and had secured the high ground on the north. The mounted infantry shortly after daybreak on the 18th were in possession of the drifts at Paardeberg and Koodoesrand. The 6th Division at 6.30 a.m., were almost opposite the laager on the south. The 9th Division were but a couple of miles behind. The living net had only to be drawn sufficiently tightly round the laager to prevent any successful attempt to break out, and Cronje and his whole army would be forced to surrender, sooner or later, from sheer exhaustion. To have adopted this plan, whilst making full use of our superiority in artillery to hasten matters, would have, no doubt, been wiser, as events turned out. But at the time,

there were several circumstances that pointed to the advisability, and probable success of an immediate attack.

It was known that heavy reinforcements were being feverishly pushed up to Cronje's assistance. Would it not be well to endeavour to secure the force in the river bed before dealing with these? Bitter experience had shown us that to give the Boer time, was to ensure an elaborate system of trenches and obstacles being added to his defensive assets. Intelligence from all sides pointed to the great demoralisation that existed in the enemy's ranks consequent on the hurried flight, and the rough handling they had received from General Knox's troops at Klip Kraal. Dissensions, too, were known to have broken out between the Free Staters and the Transvaalers. The capture of supplies and, above all transport, would have been of immense value to us at that moment.

These were some of the reasons that decided Lord Kitchener to endeavour to settle the matter by the shorter plan of assault, rather than the longer one of investment.

At 6.30 a.m. the artillery opened on the laager from a spur due south of it, and at a range of about 2,300 yards, whilst the infantry deployed for attack.

The 13th Brigade, having the Argyll and Sutherland Highlanders, the extreme right battalion of the Highland Brigade on its left, advanced in a northerly direction on the river below the laager, the Yorkshire Regiment of the 18th Brigade on its right. The Welch and Essex Regiments moving parallel with the river between Kitchener's Hill and the laager, were directed to attack the left of the Boer position, and having gained the banks of the Modder to push down stream. That neither attempt achieved a full measure of success was not the fault of the brave men who composed the attacking columns.

The peculiar advantages of the ground held by Cronje's force for purely passive defence, soon became apparent. The advance had to be carried out over 2,000 to 3,000 yards of open veldt, studded here and there by ant heaps. The bed of the Modder, 30 to 40 feet deep, bordered by mimosa and willow trees, afforded excellent cover to the Boer marksmen, whilst the dongas running at right angles to the river formed ready-made trenches. The priceless possession of an unlimited water supply was theirs.

In spite of all this, the attack was pressed with a magnificent, and at times almost reckless courage; and the results at nightfall, though hardly commensurate with the sacrifice entailed, were of a substantial character.

The Boers had been driven back on either side to within a mile of the drift. The net had been drawn tightly and securely. The majority of their horses had been killed. Their wagons and a large proportion of their supplies had been destroyed.

At one time the Welch, working down the river, forced their way to within 300 yards of the laager, and if further support had been available might, perhaps, have rushed it; at dusk they were withdrawn about a mile up stream. During the afternoon an unfortunate mistake was made that might have proved a very serious matter for the

investing force. At the commencement of the action three companies of the Gloucester Regiment were sent to occupy the height known as Kitchener's Kopje, which standing some 350 feet above and 3,700 yards distant from the Modder, was valuable alike as a chain in the cordon, and as a natural fortress from which to beat off any attacks from the south and south-east. Later, the three companies were utilised to support the fighting line, and a party of Kitchener's Horse took their place. In the afternoon the latter—acting on whose orders is not clear—left the hill to water their horses at Osfontein Farm. Here they were surprised by the commandos coming from the south-east to Cronje's assistance, and not only were they for the most part made prisoners, but the all-important kopje fell into the enemy's hands. Consequently, at about 5 in the evening and for the next four days our troops in this part of the field were placed between two fires.

Under cover of darkness, the portion of the river that had been won west of the laager having been entrusted to the troops of the 9th Division, the 13th Brigade and the Yorkshire Regiment were moved to the high ground from whence the artillery had opened the action in the morning, whilst the Welch and Essex entrenched themselves on the river about 1½ miles east of the drift.

On Monday, the 19th, although there was no further infantry attack, our guns kept the Boers confined to their trenches and the bed of the river. Lord Roberts having arrived, Cronje sent a request for a cessation of hostilities for 24 hours, to enable the burghers to bury their dead, and to remove their wounded to Petrusberg. Previous experience, however, having taught us that anything in the nature of an armistice would probably be taken advantage of by the simple farmers, to dig fresh trenches and generally to strengthen the defences, it was refused and unconditional surrender demanded. Cronje's reply was understood to mean that he was prepared to accede to this, but on being requested to come out personally he altogether repudiated any intention to surrender, and to the bearer of the message added, "You shall never take me alive." Eight days after he was on his way to Cape Town!

The 7th Division arrived on this day, and General Chermside's brigade was ordered to relieve the Welch and Essex to the east of the laager on the following morning. In the afternoon an attempt was made by the 13th Brigade to recapture Kitchener's Kopje, and the lower portions of the hill were successfully occupied by the Gloucester Regiment. At dusk they were prepared to assault the summit, but it was thought advisable to defer this until cavalry could assist by a wide turning movement. The Welch and Essex rejoined the remainder of the Division on Tuesday, the 20th, and were employed in forming the outer outpost line facing south and south-east, in which direction some pressure was expected from the Boers known to be arriving daily from Natal and Colesberg. The 13th Brigade held the inner line facing the river and laager.

Wednesday was a red-letter day for the Division, for on it we succeeded in finally ousting the enemy from Kitchener's Kopje, which had been a veritable thorn in our side since the afternoon of the 18th. Some

prisoners were taken, and thirty or forty casualties inflicted on the Boers. The Yorkshire Regiment was put in charge of the hill, and remained in possession until our next forward move on the 7th March. On Thursday, the 22nd, two severe thunderstorms made bivouacking on the open veldt anything but pleasant. They also caused the river to rise several feet, and to bring down in its flood 1,200 or 1,500 dead horses from the laager. Whether the flavour of the Modder was improved or otherwise by this clearance, we luckily had not to judge, for since our re-occupation of the kopje we were able to send our water-carts to Osfontein Farm, or to the river above the Boer position.

About this time one of the natives who had escaped from the laager stated that he could show us the exact position of the pompom, which had on many occasions, caused us great annoyance. This he did, and the artillery put several shells into the spot he pointed out. His information must have been accurate, for we had no further trouble with that particular gun.

Next day, Friday, the 23rd, a determined effort was made by the enemy, from the south-east to drive the Yorkshires from Kitchener's Kopje, and the Buffs were sent to aid in the defence. Not only was the attack repulsed, but the Boers were fairly caught in a trap by the Buffs outflanking their left, and the King's Own Scottish Borderers from Osfontein doing the same on their right. After holding out for a couple of hours in some bush south-east of the hill, between 70 and 80, who proved to be part of the force brought round from Ladysmith, surrendered. Several excellent ponies were included in this bag.

During the 24th and 25th the bombardment was continued, and the space occupied by the doomed army daily encroached on by means of sapping. Deserters informed us of the miserable condition of the enemy, of the foul state of the trenches and laager, and of the quarrels between the Transvaalers and their allies. They spoke, too, of the intention of the more determined to make an effort to break out. As a consequence of this intelligence, elaborate preparations were made to prevent escape. The cordon was strengthened at night, and instructions given to the 13th Brigade that, should attempts be made to force the line of investment, they were to fire only to their front, *i.e.*, towards the river. Similarly the 18th Brigade were to fire only towards the south. For the rest they must trust to the bayonet, and doubtless the Dutchmen would have had a very sorry time had they summoned up courage to make a dash for freedom. But the Boer does not care to work on foot, and by this time not more than sixty horses remained, so that the numbers that emerged from the trap save as prisoners of war was infinitesimal.

Two events happened on the 26th which materially helped to expedite matters. The first was the bombardment by the 6-inch howitzers, which had just arrived. In all only 15 or 16 rounds were fired, their object being not so much to destroy as to intimate their presence, and to suggest worse things to come. Although the prisoners afterwards affected to make light of the effects of lyddite, there is no doubt that the advent of these terrible instruments of war, assisted considerably in aiding the already demoralised burghers to make up

their minds to surrender. The second was the gallant advance of the Canadians and Royal Engineers, by which a considerable amount of ground was gained along the river west of the laager, and which enabled our troops to enfilade and render untenable, the Boer trenches in that neighbourhood.

The Free Staters next morning told us that their last ration was consumed on the 26th, and that they had on that day addressed a communication to Cronje, in which they set forth that, escape being impossible, hope of relief abandoned, and food exhausted, they had determined that, with or without his leave, they would surrender; but that to give an opportunity to those who were prepared to risk their lives in an attempt to break out during the night, they would defer their purpose until the morning of the 27th.

However this may be, and whatever may have been the determining factor, loud cheering from our men all along the south front soon after daybreak, announced the fact that at last, without a doubt, Cronje had thrown up the sponge.

And it was the dawn of the nineteenth anniversary of Majuba!

The Boers could be seen sitting outside their trenches, white handkerchiefs and pieces of cloth fluttering, here and there in the breeze.

To the 6th Division fell the honour of taking over the prisoners, who were ordered to collect on the south side, after laying down their arms. Each commando was then formed up under its own commandant, and led past General Kelly-Kenny, two and two. As illustrating the complete want of order and organisation among them, it may be mentioned that the Boer officers experienced great difficulty in getting their men to carry out this not very complicated manœuvre. Altogether the standard of intelligence, as judged by their physiognomy, manner, and movements, was of a very low order, the Free Staters, however, comparing favourably with the Transvaalers. Far from being dejected or appearing to feel the ignominy of their position, the majority were in high spirits, and nearly all saluted the general with a smile as they filed past. The official numbers with commandos and commandants were as follows:—

O.F.S. Artillery—Major Albrecht, 45 men.

One Vickers-Maxim, three 7·5-centimetre Krupps; one Q.F. 12-pounder.

Commando.	*Commandant.*	*Men.*
Kroonstadt	J. V. Meantges	134
Ladybrand	R. J. Sneyman	134
Ficksberg	De Villiers	44
Winberg	J. W. Kok	193
Hoopstadt	J. Greyling	373
Bloemfontein	Fouri	202
Jacobsdal	A. Smit	16
Boshof	J. W. Grunewald (field cornet)	112
Petrusberg, Fauresmith, Vryburg		67
	Total Orange Free Staters	1,320

Transvaalers :—

Commando.	*Commandant.*	*Men.*
Potchefstroom - -	Roos - - - -	615
,, - -	Wolmarans - - -	646
Gatsrand - - -	Maartens - - -	446
Scandinavians - -	Früs (field cornet) - -	49
Bowyk - - -	Terblanche (field cornet) - -	318
Bloemhof - -	Woeste - - - -	518
	Total Transvaalers - -	2,592

Making a grand total, with 160 wounded, of 4,072.

Conversations with the various commandants elicited some interesting facts. Albrecht appeared somewhat depressed. He said he had repeatedly warned Cronje that he was getting himself into a trap from which there could be no escape, by remaining in the bed of the river, but that his advice was of no avail. As an artilleryman he had a high opinion of the so-called pompom on account of its range, accuracy, mobility, and moral effect. He stated that lyddite both at Magersfontein and here had done little damage. Roos, who had been most kind to two of our officers taken prisoners on the 18th, sharing his tobacco and coffee, and making them as comfortable as the circumstances would permit, was anxious to know what we thought of his management of the rear-guard action at Klip Kraal on the 16th, and was delighted at our warm encomiums. Others told us that Cronje never anticipated the arrival of our infantry on the 18th, that had he done so he would have occupied the kopjes, that he was about to inspan when he realised their presence, and that in their absence he did not consider it would have been a difficult matter to have pushed on in spite of the cavalry.

On the 28th, Ash Wednesday, we heard that Sir Redvers Buller was within 6 miles of Ladysmith, and that the hardly-pressed garrison was practically relieved. St. David's Day saw the 7th Division settled down in a fresh and more comfortable bivouac near Osfontein Farm. The Yorkshires still held Kitchener's Kopje, the Welch and Essex furnishing the outposts to the south-east, and the 13th Brigade to the east. The army head-quarters were moved to Osfontein Farm.

Heavy rains were experienced during the following days much to the discomfort of all. For some time, owing to the loss of a convoy at Watervall Drift, we had been reduced to a daily ration of two biscuits, and though fresh meat was fairly plentiful it was of poor quality and abnormally tough even for trek ox and goat. To make matters worse, tobacco gave out, and some men rather than be without their pipe were reduced to smoking tea.

Information having been gathered from reconnaissances that the Boers, computed to be from 10,000 to 12,000 strong, were occupying the range of hills 5 miles due east of Osfontein, orders were given on the 6th for a combined movement to turn them out. Their left rested on the

heights known as the Seven Kopjes, to the south of which lay the open veldt, their right was astride of the Modder, a total frontage of from 9 to 10 miles.

The cavalry and mounted infantry starting at 2 a.m. on the 7th were to move due south until they had cleared the Seven Kopjes, when they were to turn east and threaten the enemy's communications.

The 6th Division at 3 a.m. were to follow the cavalry and attack the Seven Kopjes from the south.

The 7th Division and Guards' Brigade to await the result of the turning movement opposite the hills south of the river, advancing eastward if it were successful. The 9th Division were to act similarly on the north of the Modder.

The 6th Division moved off punctually at 3 a.m. and just before daybreak reached the Damfontein Pan. Here the cavalry and mounted infantry, who had for some reason been delayed, came up on the left, and the Division was halted until the mounted troops had crossed its front. Soon after daylight preparations had been completed for the attack on the Seven Kopjes, the 18th Brigade deployed on the left, facing east, the 13th Brigade on the right, facing north-east, and outflanking the left of the Boer position. The Brigade Division and a battery of 5-inch howitzers were in the centre.

But the enemy, looking down on the flanking movement, and seeing the cavalry sweeping over the veldt 3 miles to the south, by no means appreciated this, to them, unseemly manner of making war. They had been convinced we should make the usual frontal attack, and no inducements or threats of commandants or field cornets could prevent a hurried abandonment of the heights. We could see them leaving the kopjes as fast as their ponies could carry them, and after a few rounds from the howitzers, the two brigades occupied the hill without resistance. The cavalry continued the pursuit, but without the co-operation of infantry, and with exhausted horses, did not succeed in doing much damage, though their own casualties amounted to 52 when night fell. After crowning the heights the Division turned northward, and, leaving Table Mountain on its left, struck the river 3 miles east of Makauw's Drift at 4 p.m. Orders were shortly received to move on to Poplar Grove, where army head-quarters had been established, and at 5 p.m. we were under way again, bivouacs being finally formed after a total march of 22 miles.

On the 8th the Division proceeded to Roodeport Farm on the Modder, 7 miles east of Poplar Grove, the remainder of the army resting at the last-named place. No opposition was met with on this day, neither did we see anything of the enemy on the 9th, which we spent at Roodeport, but information was brought in that the Boers were in strong force at Abraham's Kraal, 10 miles further up stream. Orders were now received for the final stage of the advance on Bloemfontein. They were as below :—

MOVEMENT MEMO.

1. The force will advance on Bloemfontein in three columns, composed as follows:—

Left Column.	*Centre Column.*	*Right Column.*
Lieut.-General French.	The F.-M.C.-in-Chief.	Lieut.-General Tucker.
6th Division.	9th Division.	7th Division.
1st Cavalry Brigade.	Guards' Brigade.	3rd Cavalry Brigade.
Alderson's M.I.	2nd Cavalry Brigade.	Ridley's M.I.
	Martyr's M. I.	
	Le Gallais' M.I.	
	65th Howitzer Battery.	
	Heavy Artillery.	
	Naval Brigade.	
	Ammunition Reserve.	
	Supply Park.	
	7th Company R.E.	

2. The movement will commence to-morrow morning, the 10th inst., and the points to be reached will be as follows:—

Date.	*Left Column.*	*Centre Column.*	*Right Column.*
10th	Baberspan.	Driefontein.	Petrusberg.
11th	Doornboom.	Asvogel Kop.	Drikop.
12th	Venter's Vallei. (Cav. to Leewberg).	Venter's Vallei. (Cav. to Leewberg).	Panfontein. or Waltevrede.
13th	Leewberg.	Leewberg.	Venter's Vallei.

3. The general officers commanding left and right columns will be responsible for keeping up communication during the march with the centre column.

4. On Saturday, the 10th, the right column will march at 5 a.m., the centre and left at 6 a.m.

5. Army head-quarters will march with the centre column, and the Director of Telegraphs will arrange for keeping up telegraphic communication between it and the rear.

In accordance with these orders, at 6 a.m. the advance guard, consisting of the Welch Regiment, had cleared the bivouac, followed by the remainder of the 18th Brigade, the three batteries, and the 13th Brigade. The route to Baberspan *viâ* Abraham's Kraal followed generally the course of the Modder. At the latter place were some ominous-looking kopjes, between which and the river the road ran. About 9 a.m. information was sent by the cavalry that these were strongly occupied, and as our orders were to avoid the enemy's position and to push on to the camping ground, the Division made a half turn to the right and continued the advance, leaving the Abraham's Kraal hills about 2½ miles on our left. We were now approaching a series of low kopjes at the far end of the basin, of which the hills near Driefontein formed the southern and those at Abraham's Kraal the northern bounderies. Word was passed back by the cavalry that no enemy was in front of us, but this was soon disproved by a heavy fire being opened on the leading troops from front and flanks.

Preparations were quickly made for attack, Welch and Essex on the left, Buffs on the right, whilst the Yorkshires were moved wide to the right to work along the kopjes to the south, and outflank the position.

The enemy were without much difficulty driven out of a Kaffir Kraal on a small hill on the left centre, but the main position, strongly held, proved a more serious matter. The Brigade Division coming into action at about 1,800 yards made excellent practice, and though sustaining many casualties, it was principally through their instrumentality that the infantry were able to gain ground. Two Boer guns on the left caused considerable annoyance at this time, firing shrapnel at 3,500 to 4,000 yards, though at this range their effect was rather moral than actual.

The Yorkshires on the right now began to make their presence felt, and about 5 p.m. the position was most gallantly rushed with the bayonet by the Buffs, Welch, Essex, and a portion of the Gloucesters. Between 20 and 30 prisoners were taken, mostly Johannesburg Zarps, the cream of the Boer Army. Had the cavalry been able to take advantage of the victory, two or three hundred of the enemy, who only fled just prior to the bayonet charge, might have been captured. The action began at 10.30, and the last shot was fired at 5.20. Our losses were 24 officers and 403 N.C.O.'s and men. The Boers returned their casualties at 7 killed and 18 wounded. We buried 102 burghers next morning, whilst many undoubtedly remained unburied owing to the large area over which the fight ranged. Natives who had been with the laagers in rear also assured us that many wagon-loads of killed and wounded, had been sent back towards Bloemfontein during the course of the battle.

In the Orange Free State capital, after the occupation, we met several burghers who had been present on the 10th March, and one and all declared that in no engagement on this side had the Boers received such a blow to their prestige as at Driefontein. "The position," they said, "was one of our own choosing, and one after our own hearts; the troops engaged were the best and bravest in our army, and yet you got into us with the bayonet." We learnt also that the Boer plan was to allow the Division to reach that point of the road which passes between the river and the Abraham's Kraal kopjes without molestation, and then to open fire on it from both sides of the Modder. That wheel half-right was a sad disappointment to them.

On the 11th the Division, having bivouacked on the ground they had so hardly won, marched at 5.30 a.m. for Doornboom. On the way we passed several farms, all flying the white flag, but which, nevertheless, were approached with considerable caution. On all sides we heard of the precipitate flight of the enemy the previous evening, and of the improbability of any further resistance to our advance on Bloemfontein. Shortly after passing Asvogel Kop, hearing that the water at Doornboom Farm was only sufficient for the mounted troops, the halting place of the Division was altered to Kaarlspruit Farm, about 2 miles north-west of our original destination. Distance from last bivouac 14 miles.

We could now see the hilly and broken country that lies to the north-west of Bloemfontein, in which the Boers had at one time intended to make their final stand. Whether they would have done so will never be known, for on the morning of the 12th both the left and centre columns turned south-east, and by 3 p.m. had arrived at Venter's Vallei, without approaching within range of what would have proved an awkward position to carry.

On the 13th the 6th Division did not start until 3 p.m., the next halting place having been changed from Leeuw Kop to Brand Kop. About 7 p.m. it was found that the transport, owing to the exhaustion of the draught animals, was falling further and further behind, and a two hours' halt became necessary, during which the rain commenced to fall in torrents. Brand Kop was eventually reached at 1 a.m. on the 14th, and a miserable night was spent. However, all discomforts were forgotten, when next morning from the top of the hill we looked down on the capital of the Free State, and learned that we were to march in during the morning.

At 9 a.m. the Division started on its last and shortest journey of $4\frac{1}{2}$ miles, and after marching through the principal streets, amid the cheers of the British portion of the inhabitants, bivouacked north-west of the town.

The accompanying tables show the casualties sustained between the 12th February and 14th March, and the distances covered each day.

MARCH OF THE 6TH DIVISION FROM ENSLIN TO BLOEMFONTEIN.

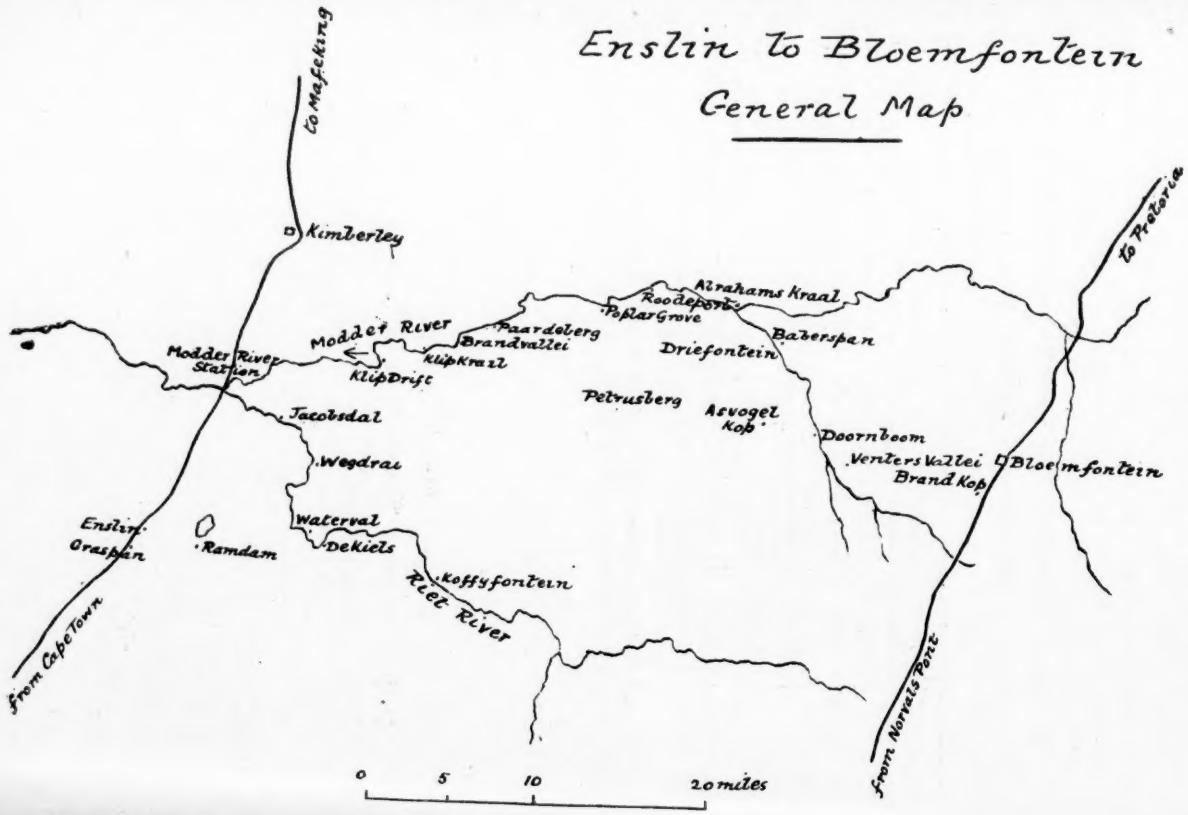
12th February to 14th March, 1900.

Date	From	To	Hour of Start	Hour of Arrival	Distance	Remarks
12th February.	Enslin / Graspan ...	Ramdam	6 a.m.	1 p.m.	10½ miles	
13th ,,	Ramdam ...	Waterval Drift ...	5 a.m.	11 a.m.	10 ,,	
14th ,,	Waterval Drift.	Wegdrai	1 a.m.	11 a.m.	10 ,,	Including detours.
14th ,,	Wegdrai ...	Klip Drift... ...	5 p.m.	12 30a.m. 15th	12 ,,	27 miles in 24 hours.
16th ,,	Klip Drift ...	Brandvallei ...	5 a.m.	12 noon 17th	11 ,,	13th Bde. engaged with enemy's rear guard.
17th ,,	Klip Drift ...	Brandvallei ...	3 a.m.	12.30p.m.		18th Bde. followed.
17th ,,	Brandvallei ...	Paardeberg ...	5 p.m.	9.30 a.m.	5 ,,	
18th ,,	Paardeberg ...	Boer Laager ...	3 a.m.	7 a.m.	2 ,,	Battle of Paardeberg.
1st March	Boer Laager...	Osfontein	—	—	4 ,,	
7th ,,	Osfontein ...	Poplar Grove ...	3.30a.m.	7 p.m.	22 ,,	Including detour; drove enemy from his posit'n.
8th ,,	Poplar Grove	Roodeport Farm	12 noon	4.30 p.m.	7 ,,	
10th ,,	Roodepoort ...	Driefontein (near)	6 a.m.	6 p.m.	10 ,,	Battle of Driefontein.
11th ,,	Driefontein ...	Kaals Spruit ..	5.30 a.m.	3 p.m.	14 ,,	
12th ,,	Kaals Spruit	Venter's Vallei ...	5.30 a.m.	2.30 p.m.	12½ ,,	
13th ,,	Venter's Vallei	Brand Kop ...	3 p.m.	1 a.m. 14th	13½ ,,	
14th ,,	Brand Kop ...	Bloemfontein ...	9 a.m.	2 p.m.	6 ,,	

6TH DIVISION.

Difference in strength between 12th February and 14th March, 1900.

Units.	Strength on 12-2-00.			Strength on 14-3-00.			Decrease.			Explanation of decrease.												
										Killed.		Died of Wounds.		Wounded.		Sick.		Missing.		Other Causes.		
	Off.	W O's.	NCO's & Men	Off.	W O's.	NCO's & Men	Off.	W O's.	NCO's & Men	Off.	NCO's & Men	Off.	NCO's & Men	Off.	NCO's & Men	Off.	NCO's & Men	Off.	NCO's & Men	Off.	NCO's & Men
Divisional Troops	38	2	1006	36	2	877	2	–	129	–	4	–	–	1	17	–	65	1	1	–	42
2 Bn. Buffs ...	18	1	786	10	1	575	8	–	211	2	25	–	–	6	105	–	81	–	–	–	–
2 Bn. Glouc. R. ...	23	1	716	19	1	572	4	–	144	–	9	–	3	3	46	1	80	–	3	–	3
1 Bn. W. Rid. R.	23	1	789	17	1	596	6	–	193	–	23	1	1	4	124	1	45	–	–	–	–
1 Bn. Ox. Lt. Inf.	20	1	595	14	1	430	6	–	165	2	16	1	1	2	74	1	74	–	–	–	–
1 Bn. York. R. ...	21	1	953	12	1	723	9	–	230	1	46	–	–	7	131	1	42	–	11	–	–
1 Bn. Welch R. ...	23	1	875	10	1	660	13	–	215	2	32	–	–	10	165	–	5	1	13	–	–
1 Bn. Essex R. ...	23	1	936	11	1	757	12	–	179	1	21	1	–	5	128	3	8	–	15	2	7
Totals ...	189	9	6656	129	9	5190	60	–	1466	8	176	3	5	38	790	7	400	2	43	2	52


Enslin to Bloemfontein
General Map
To Mafeking
Kimberley
To Pretoria
Abrahams Kraal
Roodepoort
Poplar Grove
Paardeberg
Brandvallei
Modder River
Modder River Station
Klip Kraal
Klip Drift
Driefontein
Baberspan
Petrusberg
Asvogel Kop
Jacobsdal
Doornboom
Venters Vallei
Brand Kop
Bloemfontein
Wegdraai
Waterval
Enslin
Orasban
Ramdam
Dekiels
Koffyfontein
Riet River
From Cape Town
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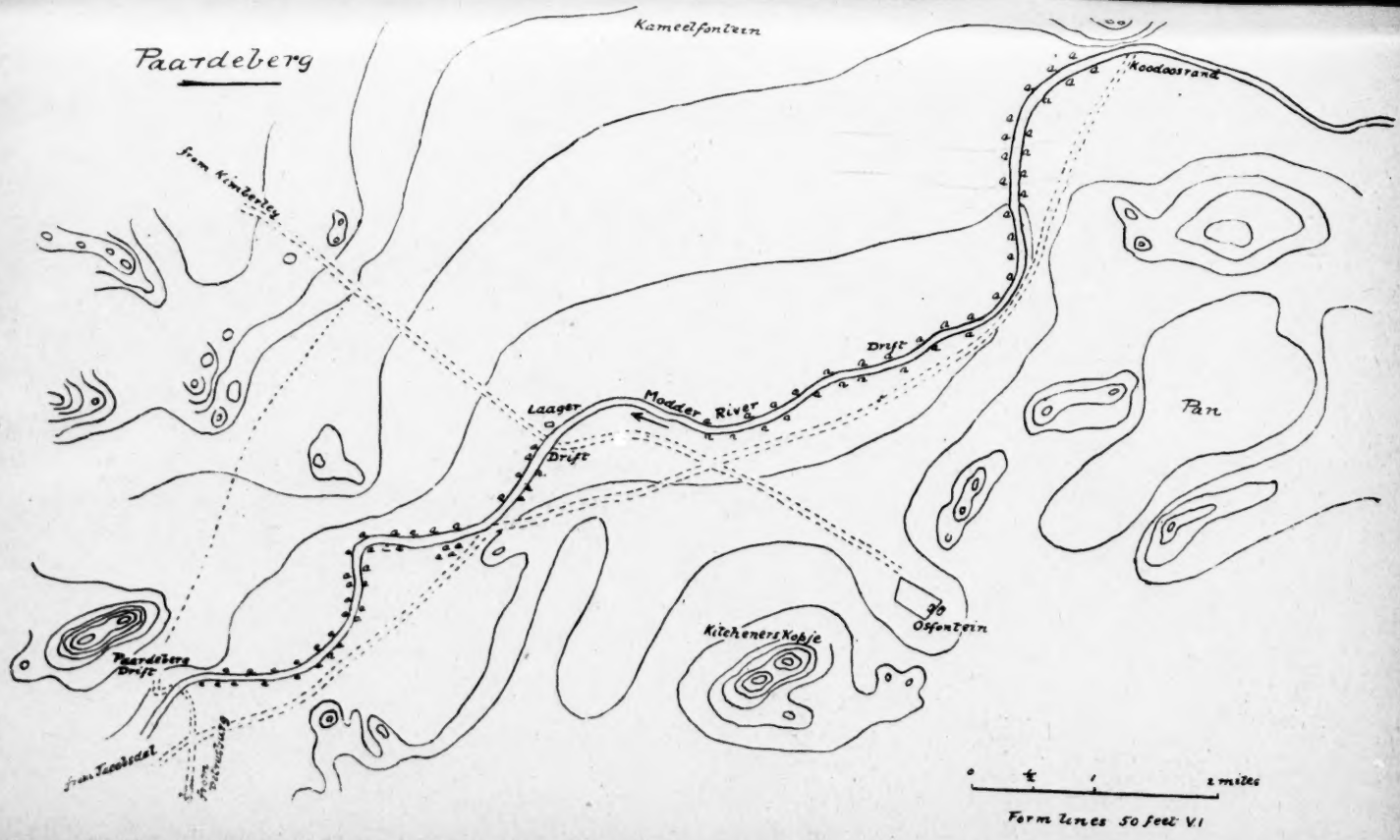
Paardeberg
Kameelfontein
Koodoosrand
from Kimberley
Drift
Laager
Modder River
Drift
Pan
Kitchener's Kopje
Osfontein
Paardeberg Drift
from Jacobsdal
2 miles
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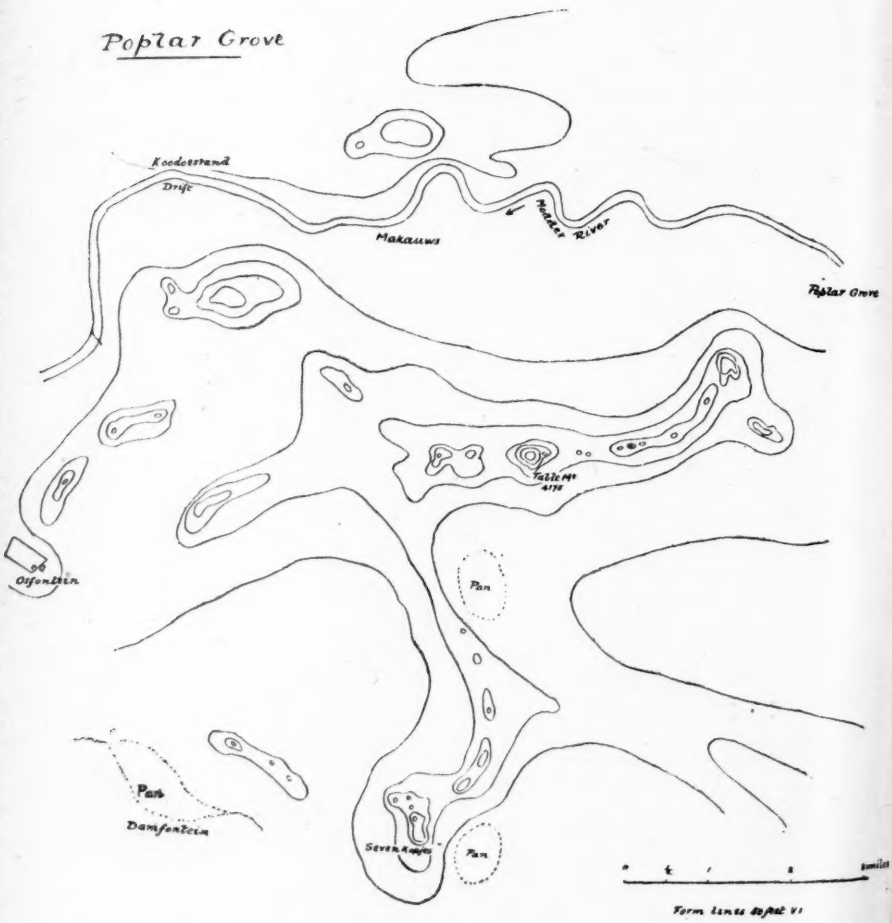
Poplar Grove
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Form Lines Depot VI

RUSSIA'S PROGRESS IN EAST ASIA.

By CARL SCHULTZ, Naval Senior Lieutenant, June, 1900.

Translated from the "Marine Rundschau" of August-September, 1900.

THE countries of Asia bordering on the Pacific Ocean, the territories drained by the rivers flowing into it, and also the bays indenting the coasts, together with the groups of islands, are comprised under the heading "East Asia."

Of this enormous area Russian East Siberia and the three neighbouring States, viz., China, Japan, and Corea, are taken into account in considering, politically, the advance of Russia in Eastern Asia. Moreover, regard has also to be paid to England—Russia's greatest European rival—with her regular line of stopping-places towards the East and her three bases: Singapore, Hong-Kong, and Wei-Hai-Wei.

I.—The History of the Acquisition of Eastern Siberia up to 1861.

The conquest of Eastern Siberia was commenced by Russia in the expeditions of the Cossack leaders—Pojakov, Chabarov, Stepanov, Paschkov, and Tschernigovski—who, with their followers, invaded and plundered, from the year 1643 onwards, the Amur region from Yakutsk and Yeniseisk, and in their excursions even penetrated far into Manchuria. The leaders of these marauding expeditions compelled the individual tribes to pay tribute, and constructed fortified positions as starting-places for their further enterprises. The especial object was to acquire Albasin, which has been the chief town of the Russians since 1651. In 1659 and 1685 the Chinese conquered Albasin and destroyed it. In 1665 Tschernigovski occupied the Amur region and placed his conquests under the dominion of the Tsar, who declared them a Russian province. Russia had, however, even in 1869, after Albasin had withstood a siege for a year, to enter into negotiations with China, which led to the Treaty of Nertschinsk, by which the whole of the conquests on the Amur again reverted to China.

This unique and extraordinary energy of China, which despatched troops over a period of ten years into such distant districts for reconquest and conquest, had its origin in the Tsing dynasty, which commenced to

reign in 1644, and whose mother country was in Manchuria. The first Emperors of the Manchu house had naturally a particular regard for the interests and boundaries of their former home.

In the following half of the century the Amur remained lost to Russia. But it was during this period that the other portions of Eastern Siberia, viz., Kamschatka, the Kurile Islands, the Aleutian Isles, and also Alaska (Russian from 1822 to 1867, and in that year seceded to the United States) were occupied.

The attention, however, of the Russian Government, owing to the toilsome and difficult communications by land and sea with these lands, and likewise to the want of harbours on their shores, was always directed to the Amur—the waterway of which, although then unexplored, promised many advantages; for this was the only river of Siberia which did not flow into a sea continuously covered with ice, and which could alone, consequently, furnish an exit to the open sea. Peter the Great and Catherine the Second had already hinted at the conquest of the Amur as a necessary step for the development of Russia in the East, without, however, being able to bring the question any nearer to a head, for the immense interests of the Empire continuously interfered to prevent this scheme of advance. A change in the opinion of the value of the Amur did not occur until the end of the fortieth year of the last century. In 1846 the Tsar Nicholas the First sent an expedition under Lieutenant Govrilov to the mouth of the Amur in order to ascertain whether the assertion made by La Pérouse, Broughton, and Kousenstern that the mouth of the Amur was not navigable for ships and vessels was correct. This expedition reported that the depth of the mouth was one and a half to two feet, and, therefore, that the chief value of the river as furnishing Siberia with an entrance to the open sea did not exist. In consequence of this, the Amur question was dropped, so far as Russia was concerned. Steps were then taken to enlarge Petropavlovski, on the eastern coast of Kamschatka, in order to make it the chief port and military station of Russia on the Pacific. It was fortunate for Russia that Muraviev was appointed General Governor of Eastern Siberia in 1847, as he clearly recognised the interests of the country, and forthwith re-opened the Amur question. In St. Petersburg his plans were not altogether favourably looked upon, as the unfavourable result of the expedition of 1846, and likewise the fact that the advent of Russia in the Amur region might lead to a breach with China, had had a deterring effect. This apprehension, which had existed since the unfortunate experiences resulting in the Treaty of Nertschinsk, and which had its foundation in the remarkable over-estimate of the power of the Chinese Empire, misled the Russian diplomats for the space of a century to constantly adopt a policy of deference towards China, which was interpreted by that Power as weakness, inciting it to violent acts against Russia and disturbing on many occasions the relations between the two countries. Muraviev completely broke away from this timorous policy. His political maxim was, "Oppose China, not with words, but actions"—a maxim to which he was indebted for his great political success, and which has been found to answer to the present day, not only by

Russia, but also by all other Powers. In his preliminary steps, Muraviev had himself to be responsible. In 1849 he sent the transport "Baikal" to the mouth of the Amur. This ship was commanded by Captain-Lieutenant Nevelski, a man filled with enthusiasm for Muraviev's far-seeing plans. After this ship had surveyed and established the fact that, at its mouth, the Amur was accessible for ships and vessels approaching from either the north or south, and that Saghalien was an island—the idea formerly being that this island was a peninsula, the northern part of which was connected with the left bank of the Amur—Nevelski, being impressed by the immense importance of the highway of the Amur to Russia, and in spite of the explicit edict of the Tsar that no settlement was to be made, ceremoniously hoisted the Russian flag on the 1st (13th) August, 1850, on the promontory of Knegda, on the left bank of the Amur, and here founded Nikolaievsk. After long deliberation he succeeded, through the intercession of Muraviev, in obtaining the Tsar's sanction in 1851 to his act.

This was the decisive turning-point in the policy of Russia in the Far East.

Nevelski was entrusted with the continuance of the explorations, and was placed at the head of the Amur expedition, which consisted of 60 seamen and Cossacks, with two officers and a surgeon. A whale-boat and a yawl were also placed at its disposal.

Although the strength and equipment of the expedition were deficient, large secret powers appear to have been given to the leader. After the foundation of Nikolaievsk, which was used by Muraviev as a feeler against China, a certain liking for this policy of Muraviev and Nevelski was aroused in St. Petersburg, for which, however, the Russian Foreign Office would not undertake any responsibility, but the results of which would be accepted under the definition that "where the Russian flag has once flown, it must not be pulled down."

In the occupation of Nikolaievsk the friendly relations with China were not disturbed. It is true that in Pekin consent was not given, but, on the other hand, nothing was done by way of protest.

In consequence of this, Nevelski took a further step towards the south, after the climatic and hydrographical conditions of the Gulf of Tartary had been inquired into, and it had become recognised that these were considerably more favourable than on the Amur-Liman. Although not officially empowered by his Government, he established in 1853, for the military occupation of the respective districts, the Marien post on the Amur, the Alexander post at Castries Bay, the Constantine post in Emperor's Harbour, the Iljen post on Saghalien Island, and the Muraviev post in Southern Saghalien. The Tsar gave his assent to the proceedings, and Nevelski received the rank of Governor; a naval company of 240 seamen, a sotnia of mounted Cossacks, and a train of mountain artillery being placed at his disposal.

China again did not give her assent, but neither did she attempt to oppose Muraviev's enterprises.

It was shown, even in 1854, how important the actual acquisition of the Amur was. Owing to England's absolute command of the sea during the Crimean War, Russia was compelled to use the land route for equipping, strengthening, and provisioning its Eastern ports. The only way, therefore, to do this was *viâ* the Amur. The Chinese Government had not then given its permission to Russia to navigate this river, which was controlled by the Chinese fortress of Aigun, on its right bank.

Muraviev was, however, directed by his Government to commence, even without permission, transport on the river.

The expedition consisted of a combined line battalion of 800 men, a mounted sotnia of Transbaikal Cossacks, a half mountain battery, and large quantities of food and military stores. With 75 rafts and small craft and the small steamer "Argun" the journey was commenced in 1854 from Nertchinsk.

The Chinese Governor of Aigun refused to grant permission to use the river, but withdrew his refusal after a short and energetic discussion with Muraviev, who pressed forward close to the fortress with the intention of fighting.

This reinforcement brought the Russian fighting strength in the East up to the following numbers:—

1. Petropavlovski - - 1,000 men, the frigate "Aurora" and corvette "Alwaza."
2. Nikolaievsk - - 430 men, with 2 guns.
3. Emperor's Harbour - 106 men, 8 guns, and the frigate "Pallas."
4. Alexander Station - 104 men, with 1 gun.
5. Marien Post - - A sotnia of Transbaikal Cossacks, a half mountain battery, and 8 men.

The posts on the Island of Saghalien had been vacated. Shortly after the arrival of the reinforcement at Petropavlovski, a combined English and French squadron attacked, but was beaten back with considerable loss. The Russian casualties amounted to 37 killed and 75 wounded. Muraviev then decided, on account of its isolated position and its bad land communications, to vacate Petropavlovski, which was successfully accomplished in 1855 with the assistance of the two ships stationed there and three transports.

A second large transport in that year, and a third in 1856, which went down the river with 3,000 and 1,600 men respectively, reinforced and provisioned in the succeeding years of the war the garrisons of the East. The last transport established posts at the mouths of the Kumara, Sija, and Sungari, and, likewise, at the junction of the Amur with the small Chingan.

Once again the Chinese Government did not give their consent, but neither did it venture to attempt opposition.

On account of the difficulties in respect of commissariat, a portion of the troops was sent back to Yakutsk after the conclusion of peace. To

replace them endeavours were made to establish colonies of Transbaikal Cossacks along the whole course of the Amur in order to render the territory permanently secure. Two river steamers effected regular postal communication between them and the stations.

The "Maritime province" was formed for the purposes of better administration. This comprised Kamschatka, the shores of the Ochotsk Lake, the Udsker region, and all the Russian possessions on the lower Amur and the Gulf of Tartary, and was placed under the general government of Eastern Siberia.

In the spring of 1858, after the negotiations of 1855 at the request of China respecting the frontier had proved abortive, and Russia had strengthened its forces on the Manchurian and Mongolian boundary to 22,000 men and 40 guns—China, moreover, being engaged in fighting England and France—Muraviev regarded the moment as favourable to commence fresh negotiations respecting the settlement of the Amur question. By the Treaty of Aigun the whole of the left bank of the Amur east of Usuri was ceded to Russia. On the Amur, Sungari and Usuri were to be free places of commerce for Russian and Chinese ships. As in this Treaty of Aigun the delimitation of the country east of Usuri was not settled, and as every year Nicholaievsk and the mouth of the Amur were blocked with ice for some months, Muraviev proceeded further south. On the 20th July (1st August), 1860, he caused Port May (the later Vladivostok), on the southern end of the peninsula called after him, and Possiet Bay, quite close to it on the Korean frontier, to be occupied. In the same year, a treaty was concluded in Pekin by Count Ignatiev, in which the Chinese Government recognised Russian ownership over the Amur and Usuri regions, and by which the frontiers were settled which stand, officially, to the present day, with the exception of Port Arthur and Talienwan.

Russia thus acquired without the use of the sword this rich and large (five times as large as Germany) territory, so important for the development of Siberia, and that by the safe and energetic policy of only two men. Muraviev resigned his post as Governor of Eastern Siberia in 1861. The Tsar conferred upon him the title of Count, with the honoured surname of Amurski, in recognition of his great services. The military-political portion of the occupation of Eastern Siberia had, at his retirement, been provisionally settled.

II.—The Advance of Russia since 1861 in Eastern Asia, from an Economic Point of View.

A.—Colonisation.

The necessity arose, on acquiring the new country, of making investigations with the view of peopling the land with Russian settlers who could turn to good account the rich natural products of the soil and exploit its hitherto untouched treasures below—transferring there as true Russians their Russian habits and feelings, and creating a new home for themselves and their children. Thus the land which was only nominally under the Russian Government would effectually become Russian.

Since the serfs had been given their freedom, Russia had, owing to their large natural increase, an excellent race in its agricultural population for the colonisation of this enormous cultivable land.

The division and leasing of the land to the colonists was simplified in that the whole of Siberia was the property of the State (or Crown land)—no matter whether it was desert or peopled by Russian peasants or other settlers. Only the southern half of the Government of Tomsk—the Altai mining district—was the possession of H.M. the Tsar. In addition a few small portions of land belonged to private individuals, monasteries, and communities, etc., to whom they had been granted or sold in the fifties. They were, however, very small in extent as compared with the Crown lands.

The Amur maritime province, which, properly speaking, comprised East Asiatic Siberia, belonged up to 1887 to the General Government of Eastern Siberia. In this year the Amur General Government was formed and sub-divided for administrative purposes into three districts, viz.: the Transbaikal, Amur, and the maritime provinces. It comprised the whole of the Russian portion of the Amur basin and the country bordering on the Japan, Ochotsk and Behring Seas, excluding the Island of Saghalien and Kamschatka, which possessed their own particular administration.

The Amur Government was, as regards colonisation, more suitable than the rest of Siberia, as it possessed so much cultivable land that each peasant could possess as much as he wanted, having regard to his means.

Of its three sub-divisions, the Transbaikal is, on account of its large cultivable areas of land—about a third of 4,000 square miles—the most suitable for settlers; the conditions are similar in the Amur basin, the gold mines of which are only waiting proper working.

The Usuri basin, with its rich forests and coal-fields, promises a great future with China owing to the latter's scarcity of forests, especially when the means of communication are improved.

Saghalien has the least hopeful outlook, due to its inhospitable climate, but even this country has a certain value in view of its coal mines and naphtha wells. The unfavourable climate and conditions of the land of Kamschatka and Ochotsk regions render them practically worthless.

In consequence of their very favourable circumstances, and of the exceptional political value of these lands, Russia has endeavoured to guide the mighty stream of its emigrants towards Transbaikalia and the Amur and Usuri basins.

In 1861 the Government guaranteed these emigrants the following concessions, which still obtain:—Crown land is allotted to each family or community—about 109 hectares to each family. The settlers have no payment to make for its use for 20 years, and are freed from all imposts and liability for service to the Government. If the land at the end of this period has not been purchased (3 roubles per hectare) an impost, fixed by the Government, is paid for its further use. In case a colonist requires more land than falls to the lot of his family he has to pay three roubles for every additional hectare of which he becomes possessor. Each man is freed from service for ten years and from the payment of taxes to the

local administration. A further great advantage was given in 1886, viz., a free passage to Vladivostok from Odessa on the ships of the Volunteer Fleet. In the event of a settler wishing to transfer to another place at his own expense, he has to prove that he will still have a sum of 400 roubles, after abating the cost of removal, in order to be able to fit out his new settlement. If it be desired to enlarge this settlement he may receive an advance of 600 roubles, which need not be repaid until after 33 years.

Moreover, a fund has recently been established for the whole of Siberia for furnishing assistance when required. Advances are made out of this fund, not only for the journey, but to meet the expense of building houses and for their equipment. Further, means are also placed at the settler's own disposal. Storehouses are furnished with agricultural implements, wood material, and seeds of various kinds, etc., in order to supply, at the starting of the farms or settlements, the necessary requirements *in natura*. Steamers are chartered for the conveyance of settlers on the rivers, and experienced people engaged to conduct these transports and to assist the colonists on their journey, as well as also to their settlements. Particular privileges are given to settlers discharged from military service or in the Reserve. Also men who have completed their military service with the Siberian troops may settle there with their families with similar rights as the other settlers have. Thus the colonisation of these lands remains in the hands of the Government, who conducts it in accordance with political views and in the interests of the whole country. The whole direction of the colonisation of Siberia by people from European Russia was placed in 1896 under the control of the Minister of the Interior, by whom was instituted a special "Colonisation Department." Only emigrants who comply with the regulations of this department participate in the privileges which are granted by the Government.

It appears from these regulations that the Russian Government is fully aware of the value of Russian colonisation, and does everything in its power to induce the colonist to settle in these districts. This is recognised as a vital necessity for the power of Russia and for the prosperity of these lands.

If the bad communications, especially when the colonising commenced, are considered, it can well be said that Russia may be satisfied with the present result. At the census of 1897 there were about 450,000 Russians in Transbaikalia—approximately 70 per cent. of the total population. In the Amur region (which is the same size, about 11,000 square miles) the number of Russians amounted to about 110,000, who composed about 80 per cent. of the total population. The Asuri maritime province and Saghalien—about 7,000 square miles—had about 130,000 Russian settlers, or about 75 per cent. of the population. The Ochotsk and Kamschatka district, with its unfavourable conditions, numbering only 35,000 inhabitants (about one to a square mile), had approximately 7,000 Russians, therefore 20 per cent. Thus it is evident that with the opening of the Siberian Railway the number of settlers will, in these distant parts, constantly grow, and that the Colonisation Department will, owing to

the importance of these districts, direct them there. Moreover, when the railway is completed, agriculture—the most important source of industry of the Siberian people—will become more profitable, owing to the facilitated means of export and conveyance to market, and thus this country will become more suitable for settling in.

A further way of colonising is the method of compulsorily sending people to Siberia annually. At the present day the number that are yearly sent amounts to over 12,000 persons of both sexes. The distribution of these among the Governments is very unequal. In the Amur Government their number is very small. Only the Island of Saghalien is exempt, this being entirely a convict colony. There are here about 4,000 men and 1,000 women convicts—most of them murderers, robbers, political offenders, and important criminals, who for the most part have come from the Siberian prisons. About one-half of the convicts live in prison; the rest in semi-freedom in the convict colonies, the Dui coal-mines, the Dui farms, in Kosakovsk, and in Aniwa Bay. The central station of the whole prison arrangements in Saghalien is the locality of Dui. Here there are four large prisons.

This means of colonising, on the whole, is not conducive to the best interests of Siberia. The men are very inferior and their health imperfect. Many of them are subject from the time of their release with infectious and, in particular, venereal diseases. Their descendants compose a grievous public nuisance. A portion of the settlers that are compulsorily sent (*posselenzy*) wander about the country as beggars; the remainder possess houses. These latter, however, will contribute little to the well-being of the settlement, as only seldom does a peasant or farmer give his consent to his daughter marrying a *posselenzy*. They are mostly therefore, unmarried men or women, who are little liable to found a family. The prostitution which is rife amongst them, and the sickness arising therefrom, prevents, moreover, an increase in this people. The comparison of the numbers of men who are accompanied by their wives is as 1 is to 6; much less is the comparison of women accompanied by their husbands.

It, moreover, appears that the people of Siberia suffer very pecuniarily from this deportation, as not only the maintenance, erection, lighting, and heating of the prisons and hospitals, maintenance of officials, and contribution towards taxes in arrear by fugitive colonists, but also a portion of the cost of transporting the deported men has to be defrayed by them. It is to be wondered at that the Government has not long ago stopped this deportation, which costs the country so much, and which contributes so little to the colonising and clearing of the land.

Improvements in the Means of Communication.

In order to be in the position of being able to carry out the colonisation of these lands, the Government has had especially to consider the question of creating means of communication by which these distant parts could be brought nearer and joined to the mother country. This

was particularly necessary, considering their high political value, on account of the very great distance and the very difficult transport—taking up much time—of troops.

A telegraph had already been laid in 1856 from European Russia to Nikolaievsk—the then chief town—which was connected with Vladivostok and Pekin in 1870. The Northern Telegraph Company, besides, laid a cable from Vladivostok to Nagasaki, and so connected the former town with the telegraph system of Eastern Asia and the world generally. This has the great advantage that it forms during peace a good reserve for the imperfectly laid overland line, which often suffers long breaks in communication. The "telegraph net-work" of Eastern Siberia and China has also been completed during later years; so that to-day Port Arthur and Vladivostok are connected with all the large and important towns in these countries.

If the service of news has thus been improved, it has also been possible since 1878, owing to the formation of the company of the Volunteer Fleet, to form a State connection with Eastern Siberia. The journey, which formerly took several months, can now be performed in 40 days.

The first ships of the Volunteer Fleet were purchased during the war of 1878, and they formed a part of the Navy, and were employed as auxiliary cruisers. After the war the Company of the Volunteer Fleet was founded with these ships. They perform during peace State commissions and transport service, with the object of maintaining regular postal, passenger, and goods conveyance between Odessa and the ports of the Pacific Ocean. In war-time the ships and equipments will be placed at the exclusive disposal of the naval authorities in order to be employed as cruisers or transports.

The Volunteer Fleet has performed, by the establishment of this regular steamer service between Odessa and the ports of the Far East, conspicuous service for Russia in administrative, strategical, and economic matters. The colonisation of the most distant parts of Siberia is thereby directed in successful ways, and the despatch of the convicts to Saghalien has been organised, much simplified, and cheapened by its use. The conveyance of the post, troops, war *matériel*, and material for the building of railways has essentially increased its usefulness, and rendered the ships of other nations unnecessary.

The great disadvantages which communication by sea has, especially during war-time with a naval Power, and the great material advantages which must devolve upon Russia by the use of a quick and secure communication by land, has resulted in projects for the building of railways ever since the occupation of these lands. After preliminary surveys were made respecting the line of route of the Siberian Railway, its construction was resolved upon in 1891, and the direction *viâ* Miasz, Tomsk, Krasnojarsk, Irkutsk, Tscheljabinsk, Strietensk, Chaborovsk to Vladivostok was settled.

The construction of the line was simultaneously commenced at several places, so that the line has already been given over for traffic as

far as Irkutsk and likewise, in Eastern Siberia, the portions Vladivostok to Charborovsk, and Strietensk to Tschita. The original plan of building the line through the whole of Eastern Siberia, parallel to the Amur River up to Vladivostok, has been departed from. The portion between Strietensk and Chaborovsk has, apparently on account of the great difficulties to be surmounted, been given up, and communication by the Amur (which has existed since 1856) is deemed sufficient for the purpose —in the summer by steamer (seven days from Chaborovsk to Strietensk) and in winter on the ice.

In respect of this the Manchurian line has been commenced—details of which are given later on.

The cost of the Great Siberian Railway is estimated to amount to 350,210,482 roubles, *i.e.*, about 700,000,000 marks. The question whether any dividend will be earned by the line, time alone will show.

The importance of the line for the trade and industries of Russia is, however, without doubt, and cannot be sufficiently highly estimated. A little consideration of the advantages already obtained makes this quite clear. The line has, from a scientific point of view, been instrumental in the examination of the country, especially of the Amur region. An accurate topographical survey of 417,418 square miles on both sides of the line from Yakutsk to Vladivostok has been made for the first time. The waterways have been inspected for the purpose of making use of them to convey the necessary material for the construction of the railway. The country near the railway and of the waterways leading to it have likewise been examined from a geographical point of interest.

These researches have resulted in the discovery of 54 brown and pit coal mines, 20 gold, 40 copper, 15 iron, 2 lead, 2 plumbago, and 2 silver mines.

The regular connection of the centres of communication of Siberia with one another and with European Russia has resulted in the large surfaces of cultivable land—the Siberian Railway runs through 7,588 square miles by 100 square miles broad on both sides of the line, or 1,500,000 of square miles in all—a greater area, therefore, than Germany, Austria-Hungary, Holland, Belgium, and Denmark together—becoming colonised more quickly and systematically.

Further, industry has developed owing to the large coal and mineral possessions.

In commercial-political matters the opening of the railway has secured a great advantage, through the exceptional saving of time in the conveyance of goods between Europe and the East. Taking Shanghai as the centre of Eastern trade, this town can be reached from Berlin, *viâ* Talienwan, in about 18 days, instead of 31 *viâ* Suez, and 34 *viâ* Canada. The railway will thus become, consequent on this very great saving of time, a great rival as a means of transport, and, according to the old commercial maxim, "Time is money," will convey a large portion of the expensive goods (tea and silk form 80 per cent. of the exports from China), passengers, and mails.

The influence of the Siberian Railway will not be felt much further south than Hong-Kong, for the mails, etc., to Singapore arrive in steamers *viâ* the Suez Canal in less time than will be the case when the Siberian Railway is in full working order; up till now the railway has only one set of rails, and, compared with European lines, is only primitively built. It has a very light superstructure and only wooden bridges, so that the speed of the trains may not exceed 32 kilometres an hour.

Moreover, by increasing the size and speed of the steamers of the East Asiatic lines, their efficiency to act as competitors will be considerably increased, so that before the main lines of the Chinese net of railways is completed—especially in the southern parts of Eastern Asia—a dangerous rival in the line is not to be looked for.

Russia, however, will obtain great advantages from the railway, not only as carrier but also as consumer and producer of most of the articles of the Northern East Asiatic trade. For not only in regard to its domestic economy, but especially in military-political relations, have the greatest advantages accrued to Russia, because the conveyance of troops is not only very much accelerated, but also because the railway only runs through Russian territory—thus making it entirely secure. Three-quarters of the whole line is now finished, and even at the present time the transport of troops to the East is very much quickened. When the line is wholly completed, Siberia and Manchuria will, together with European Russia, become a great coherent military Power.

The powerful Army of the Tsar will then be in a position of being quickly concentrated with absolute safety at any point of danger, either in the East or West, from the shores of the Yellow Sea and Sea of Japan to the German, Austrian, and Roumanian frontiers. This will be more possible when the projected railways from Orenburg to Taschkent and Taschkent to Viernyi, Semipalatinsk, Banaul, and Kolywan are completed. By these lines, the 63,000 men who are present for military purposes in Turkestan and Transcaspia will obtain direct communication by land with European Russia, and in a north-easterly direction with the Chinese frontier along the Siberian line, so that in very exceptional circumstances the removal of troops also from the Afghanistan frontier to the East, or *vice versâ*, could be easily accomplished.

As the military development of its fighting strength gives to each State its position in the Concert of the Nations, the railway will enable Russia to wield the bâton in the East Asiatic Concert, which, in a not very far-distant time, scarcely any other Power will be in the position of succeeding in wresting from her. Herein is, therefore, the chief value of this gigantic railway.

As the survey of the projected portion of the line from Strietensk to Chabarovsk had disclosed great technical obstacles, Russia subsequently endeavoured, in order to obtain direct railway communication with a port of Eastern Siberia, to obtain a concession from China to build a line thorough Manchuria. In the treaty of 8th September, 1896, Russia obtained the right to do so, running from a station on the Transbaikal line through Manchuria to a station on the Usuri line. The "Russian-Chinese

Bank" was then established to carry out the building of this "Eastern China" line. The foundation of this bank was a step forward in Russia's endeavours to make China also financially dependent upon her. A treaty was concluded by the Imperial Chinese Government with the Russo-Chinese Bank, by which the Chinese East Railway Company was formed for the building and management of this projected line.

The company was given the concession for 80 years, dating from the opening of the line over its whole system. The shareholders can only be Russian and Chinese subjects. It is interesting to read the rules of this company as published by them, which clearly show that the Chinese East Railway Company is essentially a Russian one. A short extract will suffice to make this clear.

"The working of the Chinese East Railway Company must conform to that at the Russian junctions. The railway must receive, and forward on complete and at the same speed any trains from the Russian Railway. The width of the rails must be the same as that of the Russian line. The Chinese East Railway is under an obligation to lay a telegraph line along its whole line, to work it, and place it in connection with the telegraph line of the Russian Railway. It has to undertake the management of the telegraph line and forward all telegrams from Russia or China. The tariff for passengers and goods, as well as for telegrams, is settled by agreement between the company and the Russian Government. These must not be raised during the whole period of the concession without the consent of the Russian Government. The carriage of the Russian mail is to be performed gratuitously. In case of a difference of opinion, the Chinese East Railway has to accept as final the decision of the Russian Finance Minister. The company possesses the right, with the consent of the Chinese Government, of working coal mines in connection with the railway or independent of it, and likewise to carry on other mining industries and commercial undertakings in China."

These two latter regulations are consequently particularly important, as they are valid for the construction of a branch railway towards the south and west (Port Arthur, Pekin, etc.), and later on will also be available for further Russian railway projects in China.

The railway leaves the Siberian line at Kaidalovo and runs *viâ* Chailar, Bodunö, Kirin, and Ringuta to Poltavskaja, whence the Russian line runs to Nikolskoii and Vladivostok. Its length is estimated at about 1,440 English miles. Its construction was commenced on 1st October, 1898, and the intention is to have it ready for traffic by 1903.

After Russia took possession of Port Arthur and Talienwan on 28th March, 1898, the building of a connecting line thence to the Chinese East Railway was at once commenced, the southern portion of which—Port Arthur, Talienwan, and Mukden—was opened on 24th November, 1899, and joins the Chinese East Railway at Kirin.

As the technical difficulties to be surmounted on the Manchurian Railway have proved to be very considerable, and the shortening also is only, relatively speaking, small (152 miles), the great importance of this line is especially to be looked for in the commercial, and, above all, in the political and strategical advantages.

The constantly growing Russian industries will find a further great market in Manchuria. Especially will trade increase in the ports of Talienwan and Vladivostok, as it acquires a rich market easily made accessible by the railway running through Manchuria. The wealth in corn and minerals there will become of advantage to Russia. This is already ensured by Russia and the Chinese East Railway Company being conceded the privilege, both in connection with the building of the railway and independently of it, of carrying on mining industry and commercial undertakings.

Manchuria still remains, politically, nominally a part of China; it is actually Russian territory. The Russian troops, which furnished protection to the Russian engineers in their preparatory work, and made ready for the occupation of Manchuria, have grown in numbers to be compact bodies of troops, and have encircled the Chinese frontier from Blogovinschtschenk to Port Arthur, and have taken possession of all the important towns of the country, and of the great roads to Pekin from Thitsikar, Budunö, Kirin, Ringuta, and Mukden. Russia has brought this large territory under her sway without the use of the sword (Manchuria is nearly double as large as Germany) by a skilfully meditated railway policy.

III.—Political and Military Aims.

In acquiring the Amur and Usuri regions and the ports of Nikolaievsk and Vladivostok, Russia obtained so large an amount of territory and influential towns that they satisfied its immediate wants and the interests of Siberia. A precipitate haste in further forward movements was considered unnecessary, as it could well wait till circumstances in the East would change during the following decade to its advantage.

Russia was agreeable to a strengthening of Japan, as it saw in this Power, the old enemy of China, an ally with whose assistance it hoped to accomplish its further plans in Korea and China.

Russia remained, consequently, completely quiet in East Asia up to 1895. During this time, however, it worked incessantly in Russianising, cultivating, and strengthening its position in the recently acquired regions. Korea and Japan offered the nearest points of contact. In spite of the proximity of Russia to both of these countries, they have, nevertheless, entered into very little relationship with it.

The only subject of contention which has existed between Japan and Russia was before 1861, and that was in regard to Saghalien Island. This island never was occupied by Japan, but Japan always considered it belonged to her, as it is situated within the Japanese group of islands. In consequence of this, when Russia established two military posts there in 1853, Japan made a protest and concluded a commercial treaty with Russia in 1855, whereupon the latter removed the posts in question, after which both countries had the right to occupy the island and use it for agricultural purposes. In 1875, however, both Powers agreed to a new treaty, because the situation created as regards Saghalien by the treaty of commerce of 1855 was untenable. In this new treaty Russia received

Saghalien and Japan the Kurile Islands, which formerly belonged to Russia.

The whole position, however, of Russia as regards Japan and Korea suddenly changed after the war of 1895, which ended so fortunately for Japan. In this war the absolute military weakness of China was clearly demonstrated, and Russia perceived after the end of the war that the attainment of its far-reaching aims in Korea and in the Yellow Sea was opposed not by China, but by Japan.

In the Treaty of Peace of Schimonoseki, Japan had wrested from China, irrespective of her recognition of the complete independence of Korea, the relinquishment also of the southern portion of the province of Fingtien (the Liantung Peninsula), Formosa, the Pescadores group, and 300 millions of taels. Japan had thus won a position on the mainland which gave her, through its exceptionally favourable position, complete domination over North China, because Port Arthur and Talienwan are scarcely 3,000 kilometres distance from Taku, and Pekin can be reached from both these places, which were to be equipped as modern military ports, in a few days.

It was these places in particular that Russia had decided upon as acquiring for herself, the great sacred traditions of the Russian Empire having always been to obtain there an ice-free port for Siberia. Russia's plans in North China were, therefore, thwarted, owing to the territory lapsing to Japan and the position which she thus obtained in this region.

Russia, in consequence of this, assisted by Germany and France, modified the Treaty of Peace of Schimonoseki in such manner that Japan neither received the Peninsula of Liantung nor any other point on the mainland. It likewise reduced very considerably the great commercial advantages which Japan had endeavoured to obtain from China. The war indemnity was reduced from 300 to 230 millions of taels, of which the odd 30 millions was paid in lieu of Liantung Peninsula.

Whilst Japan was kept shut out of the mainland of China, consequent on the reversion of the Peninsula of Liantung, it hoped, nevertheless, to be able to make Korea independent; but here also Russia continued opposition. China had become, it is true, cut off by the treaty from all Korean concerns. In its place, however, the powerful Russia stepped in.

On the 8th October, 1895, the Queen of Korea was murdered. She had commonly been considered as the most important obstacle to the influence of Japan. Soon after the King of Korea sought refuge in the Russian Minister's house.

In the negotiations which followed between Japan and Russia, the latter obtained recognition from Japan of the entire independence of the Korean kingdom and the mutual obligation to refrain from interfering in the inner affairs of this country. In case Korea needs the assistance of one of the two Powers, Russia and Japan bind themselves not to take any steps without in the first place coming to a mutual understanding thereupon. Russia also undertook not to place hindrances in the way of

Japanese trade. Thus Russia accomplished its object of causing Japan to resign for the present all the advantages which it had hoped to acquire in Korea by its war with China.

Korea remains to this day in the same helpless condition, which suits Russia, as before the war. Russian influence can secretly continue to work in order to again break out at a favourable moment after the completion of the railway and the settlement of more pressing tasks in Manchuria and south thereof. For here "time wins" for Russia as much as "power and influence." The many newspapers which have in recent times furnished intelligence respecting Russian purchases of land, etc., in Korean ports, testify in every instance to the fact that Russia is continually working in Korea—quietly, steadily, and with a definite object in view—like she is in all other parts of Asia.

This is a matter for consideration to England as well as to China. Whilst England had been paramount in Asia since her advent there, Russia has during the last decade succeeded in opposing her and Japan and obtaining a similar position. When Russia advanced her troops towards the frontier of Afghanistan, England occupied Port Hamilton, which commands the Korean Straits, and separates the sea connection of Vladivostok with the Yellow Sea. An energetic protest of Russia, accompanied by the simultaneous concentration of her military and naval forces at Vladivostok, effected, however, the evacuation of Port Hamilton by England.

The second great result of Russia against England was the restitution of the Liantung Peninsula, which had been ceded by China to Japan. For while Russia and Germany and France protested against the cession of this territory, together with the presence of Japan on the mainland, England took the opposite view in the hope that by the cession of this territory of China, Japan would become, as an Asiatic mainland State, a good buffer against the further advance of Russia.

The next gain by Russia was of a financial kind. The war indemnity payable to Japan amounted to 230,000,000 taels. The Russian Finance Minister Witte effected an agreement to loan, with the assistance of seven French and four Russian banking-houses, the sum required for the payment of the indemnity and for the re-organisation of the Chinese Army and Navy. Under the direction of the Russian National Bank, they undertook to subscribe a loan of 400,000,000 francs, under the guarantee of the Russian Government, in the event of the inability of the Chinese to pay. On the Chinese side, the receipts of the Naval Custom House not yet otherwise mortgaged were assigned for the payment of interest and redemption of the debt. Thus, China was made financially dependent on Russia. In order to increase this dependency, Russia established in 1896, with the assistance of the same banking-houses, the Russo-Chinese Bank already referred to.

Russia had already obtained, by the spring of 1898, the further, and perhaps her greatest, gain in China in acquiring for the period of twenty-five years—a term which can be prolonged by mutual understanding—the ports of Port Arthur and Talienwan, with adequate adjoining territory;

exactly the two important places which Japan acquired in the war against China, the restitution of which Russia had required on account of their exceptionally favourable, from a political point of view, and excellent military position on the Yellow Sea.

The acquirement of both these ports, which were occupied on the 28th March, 1898, by Rear-Admiral Dubassow, was an advance exceptionally important for Russia in North China, and made it practically master of that land.

As a set-off against the advance of Russia in the north, England received from China the promise that it would never cede the Yangtse Valley to a foreign Power. England also received the concession for building a railway from Shan-haik-wan to Neuchwang, which will run from Pekin to Hsuimintan, and be built with the money of the Hong-Kong-Shanghai Bank. Owing to the mortgaging of this line as security for the loan, and as the chief engineer of the line and the chief officials of the staff were to be Europeans, Russia protested in Pekin. England was again induced by this interference of Russia to offer China her protection against any foreign oppression. Notwithstanding this, the demands of Russia were acceded to by China.

The subsequent negotiations between England and Russia, by which the former was allotted the Yangtse Valley, and the latter all the country north of the Great Wall, as spheres for railway concessions, accompanied by the obligation that both countries would not demand in each other's territory railway concessions for their respective subjects, but, on the contrary, would oppose them, appeared to form the commencement of the great partition of China.

In regard to the Shan-haik-wan-Neuchwang line, it was laid down in these negotiations that it should remain Chinese and under the control of the Chinese Government. The Government, however, was permitted to employ for the purposes of superintendence an English engineer as well as a responsible European. The Russian Government reserved the right, however, to assist claims of Russian subjects, or the founding of railways which will branch off from the main line of the Manchurian Railway towards the south-west, and penetrate the region in which the Chinese line is built, which runs towards Hsuimintan and Neuchwang. Russia thus received a free hand to build further railways from the Manchurian main line to the south-west.

After the Chinese Government had confirmed this English-Russian agreement, Russia put forward a fresh demand. This consisted in a junction railway with the Manchurian line running to Pekin. The direction of this line is not yet settled, but it will run to Pekin, branching from Kirin or Mukden. This will give Russia the advantage that it will be completely under Russian control, like the Manchurian line, that it will possess—contrary to the Shan-haik-wan-Neuchwang line—a Russian gauge, and, further, that it will be some distance from the Yellow Sea, in consequence of which it will be difficult for enemies' troops, which may have been landed, reaching and destroying it.

This advance movement is now temporarily interrupted owing to the outbreak of disorder in China, the end of which at the present time cannot be foreseen. That Russia will incur thereby permanent damage is not to be expected looking at its previous record, and because it has not omitted, concurrently with its ever-growing interests and the constant increase of the military forces of both its chief rivals, Japan and England, to bring its own land and naval forces in the East up to a strength which makes it master of the situation even in the so extraordinarily startling present commotion in China.

RUSSIA.

The strength of the Russian forces in Eastern Asia, *i.e.*, East of the Baikal Lake, is as follows (according to Count York von Warten burg):—

	Peace Strength. In Round Numbers.		War Strength. In Round Numbers.	
Field Infantry	35 Battalions	36,000 men	35 Battalions	36,000 men
Field Reserve Infantry ...	2 ,,	2,000 ,,	10 ,,	10,000 ,,
Cavalry and Cossacks	35 Squadrons and Sotnias	6,000 horses	90 Squadrons and Sotnias	16,000 horses
Field Artillery ...	168 horsed guns	—	192 horsed guns	—
Engineers	3 Battalions	3,000 men	3 Battalions	3,000 men
Fortress Troops	38 Companies	10,000 ,,	38 Companies	10,000 ,,

The military district of the Amur (comprising the Amur region, Transbaikalia, the maritime province of Kwantung, and the department of Saghalien).

[Distribution, etc., of the Russian Army, prepared by C. M. Major from Russian official sources.]

Chaborovsk Headquarters.

In command, Lieut.-General Grodekov, General-Governor.

A. TROOPS IN THE BRIGADE.

1. The East Siberian Rifle Brigade—Nikolsk Usuriski (maritime province).

1. The East Siberian Regiment—Rasdoluge.
2. ,, ,, ,, Nikolsk Usuriski
3. ,, ,, ,, ,, ,,
4. ,, ,, ,, ,, ,,

2. The East Siberian Rifle Brigade—Novokievskoje (maritime province).

5. ,, ,, ,, ,,
6. ,, ,, ,, ,,
7. ,, ,, ,, ,,
8. ,, ,, ,, Barabasch.

3. The East Siberian Rifle Brigade — Port Arthur (Kwantung Peninsula).

9. East Siberian Rifle Regiment — Port Arthur (Kwantung Peninsula).

10. ,, ,, ,, ,,

11. ,, ,, Talienwan.

12. ,, ,, ,,

The East Siberian Rifle Artillery Division (3 batteries)—Port Arthur.

1. The East Siberian Line Brigade—Chaborovsk (maritime province).

3. East Siberian Line Battalion—Chaborovsk (maritime province).

6. ,, ,, ,, Nikolaievsk.

8. ,, ,, ,, { Count Muraviev Amurski. Staff at Iman.

10. ,, ,, ,, Chaborovsk.

2. The East Siberian Line Brigade—Novgorodski (maritime province).

1. East Siberian Line Regiment—Vladivostok.

5. ,, ,, ,, Slavjanka.

7. ,, ,, ,, Vladivostok.

9. ,, ,, ,, Novgorodski.

11. ,, ,, ,, Saisonovka.

The Usuri Mounted Brigade—Nikolsk-Usuriski.

Chief Dragoon Regiment—Nasdolnoje.

1 Transbaikal Cossack Regiment—Nikolsk-Usuriski.

Usuri-Cossack Sotnia—Chaborovsk.

1. The East Siberian Artillery Brigade (8 batteries, including 2 breech-loading and 2 Mörser batteries)—Nikolsk Usuriski.

2. The East Siberian Artillery Brigade (4 batteries)—Blagovjeschtschensk (Amur).

1. The East Siberian Flying Artillery Park—Nikolsk Usuriski.

2. ,, ,, ,, Nertschink (Transbaikalia).

B. Troops not Brigaded.

2. The East Siberian Line Battalion—Blagovjeschtschensk.

4. ,, ,, ,, ,,

Reserve Battalion Strietensk } In the towns of the same
,, ,, Tschita } name in Transbaikalia.

Transbaikalia Artillery Division (2 batteries)—Nertschinsk (Transbaikalia)

The East Siberian Sapper Battalion—Chaborovsk.

Kwantung Sapper Company—Port Arthur.

1 Usuri Railway Battalion—Vladivostok.

South Usuri Train Cadre Company—Nikolsk-Usuriski.

C. Cossack Troops.

The Transbaikal Cossack Army:—

1. Werchue-Udinsk Mounted Regiment (Talienwan) } of 6 sotnias.

1. Tschita Mounted Regiment (South Usuri Mounted Brigade) } = 24 sotnias.
1. Nertschinsk Mounted Regiment (Tschita)—1 to 3 levies.
1. Argun Mounted Regiment = 72 sotnias.
1. Cossack Battery—Werchue-Udinsk.
2. ,, ,, Tschita.

Amur-Cossack Army—Blagovjeschtschensk = 9 sotnias.
Amur-Cossack Mounted Regiment.
One half mounted regiment = 3 sotnias.
Usuri-Cossack Army—Vladivostok.
Usuri-Cossack Sotnia, South Usuri Mounted Brigade.

D. Fortress Troops.

Vladivostok :—
2 Fortress Infantry Regiments (of 3 battalions).
6 ,, Artillery Companies.
2 ,, Mining Companies.
1 ,, Sapper Company.
1 ,, Telegraph Division.
Novokievskoje (Possiet Bay) :—
1 Fortress Mining Company.
1 ,, Artillery Detachment.
Nikolaviesk :—
1 Fortress Artillery Company.
Port Arthur :—
6 Fortress Artillery Companies.

Japan.

The total peace strength of the Japanese Army is as follows :—

Generals and high officials	1,098
Officers	7,759
Junior officers, etc.	31,828
Cadets, etc.	4,520
Soldiers	358,566
Civilians	7,361
	411,132

It is divided into one division, forming the Imperial Guard, and twelve line divisions. Each division has two infantry brigades (2 infantry regiments, each of 3 battalions of 4 companies); armament, magazine rifles, Murata system, 8 millimetres, and magazine rifles, Arisaka system; 1 cavalry regiment (3 squadrons); armament (lances for the guard), sabres and carbines, Murata system; 1 field artillery regiment of 6 batteries of 6 guns; 1 pioneer battalion of 3 companies; 1 train battalion of 2 companies. The forces of the separate divisions, etc., are distributed as follows during peace, viz. :—

Central Administration		9,937 men
Military Schools		5,033 ,,
Guard		8,419 ,,
1. Division, Tokio		9,815 ,,
2. ,, Sendai		8,484 ,,
3. ,, Nagcya		8,365 ,,
4. ,, Osaka		9,455 ,,
5. ,, Hiroschima		8,278 ,,
6. ,, Kumamoto		8,892 ,,
7. ,, Mixed brigade as garrison of Formosa		4,055 ,,
8. ,, Hirosaki		7,160 ,,
9. ,, Komazawa		7,119 ,,
10. ,, Himidzi		6,966 ,,
11. ,, Marrugame		7,211 ,,
12. ,, Kokoura		7,714 ,,
Reserves		72,174 ,,
Territorial Army		115,646 ,,
Recruits—Reserves		101,742 ,,
Gendarmerie		4,667 ,,
Total		411,132 men.

The troops are armed and equipped with modern weapons. The officers have studied, as is well known, with keen interest the Armies of the world. The network of railways of the country has been exceptionally perfected during the last decade, so that the mobilisation of the Army, and likewise the conveyance for embarkation or to any threatened point in the land, can be very quickly carried out.

Japan will have at her disposal in 1903 an imposing Navy and a large well-organised Army, which will be considerably superior to the military forces of all other nations interested in Eastern Asia, in the event of their not sending out large reinforcements. It must further be assumed that the very patriotic, thinking Japanese will render especial services in a war against a European nation in which not only the existence of their country, but also their hatred of Russia is affected.

The Empire of Japan will, as a well-organised East Asiatic Power, consequently have an important word in all East Asiatic questions.

It, however, will not alone be in the position of preventing Russia's progress if it is not assisted with funds by England. If Japan obtained the command of the sea during the commencement of war, Russia would be seriously affected, if she were not assisted by European allies, in her Eastern ports, but Japan would never be in the position of compelling peace. As the only very vulnerable part of Russia lies in Europe, and Japan has no base there, the latter's base will always be in Eastern Asia, and thus it would never be able, without allies, to transfer the seat of war to Europe. As Russia's policy is, however, to be on terms of friendship with the two greatest Continental Powers—Germany and France—and to ally herself with them, and England is prevented from opposing her for

fear of losing India, and also of the Russo-Franco alliance, Russia can (as it has nothing to fear from a surprise from these three) spare more troops and ships from Europe than any other European State. The Dardanelles question would also not prevent Russia ordering her Black Sea fleet to the East in the event of war. Consequently Russia will be in a position of bringing a second fleet to the seat of war scarcely six weeks after its commencement. Although the total absence of Russian *points d'appui* on the road to Eastern Asia compels her to make very heavy coal provision for this additional squadron and its journey, consequently a matter of difficulty, the possibility of its comparatively speaking quick despatch is, nevertheless, without doubt.

The advantages gained by Japan on the East Asiatic mainland would also be tentative, as the additional troops Russia can bring against Japan are inexhaustible.

It may, therefore, be assumed that the great preparations Japan is making at the present time are not intended to carry on a costly war against Russia without a definite object in view, but are only to maintain her unapproachability, and to secure, when China is partitioned, the port of Amoy, which is so exceptionally important for Formosa, and also the province of Fukian—likewise to make it capable of becoming an ally with a European Power with which it, perhaps, intends in a later decade to proceed on a favourable opportunity against Russia.

It is not expected that England, with its commanding Navy but deficient Army, will in the future proceed to extremities against Russia. It must always be a land Power in Asia, and, consequently, would lose more than it could gain in India, which has Russia as a neighbour, and thus must always back down in order to avoid a conflict.

Conclusion.

It must be taken into consideration, when looking at the great success which Russia has had in Eastern Asia, that it possesses by its geographical position exceptional advantages for opposing China as compared with other rival nations.

When it is considered what enormous sums the construction of the railway, the Russian colonising of Eastern Siberia and the maintenance of such a large military force in Eastern Asia costs, and by which the dominating position of Russia is alone secured, and by the assistance of which it can carry out its policy in Asia, it must be said that it has spared neither means nor men in order to turn to the best account the advantages given it by Nature.

Constantly, but without precipitancy, it has advanced step by step. Muraviev in the first place accomplished the peaceful occupation of Eastern Siberia, and whilst entering as little as possible into negotiations with China, he ever pressed towards the south, and only concluded treaties if the political constellation was favourable for Russia, and if its fighting means were equal to any circumstances that might occur, so that the conclusion of the treaty—favourable for Russia—guaranteed it being treated with respect. When the country was ceded, its colonisation and

Russianising was commenced by various means, and after the establishment of the necessary means of communication and a powerful fighting force, the hegemony of Russia in the East was made indisputable, so that Japan and England have been squeezed out of North China and Korea only by diplomatic negotiations.

Subsequently it made China financially dependent upon it with the assistance of French capital, and satisfied its own requirements, in the occupation of Port Arthur and Talienwan, two ports on the Yellow Sea possessing excellent strategical positions, by having an ice-free commercial port at the terminus of the great Siberian Railway, and an ice-free military port as a base for its fleet. Thus, and by the building of the Manchurian Railway, it has absolutely become the master of North China. If Russia remains at peace with the European Continental Powers, it is to be supposed that no Power in the world will succeed in taking from it the hegemony of Eastern China.

The only State which can temporarily prevent Russia in her advances towards the South is Germany.

Germany can fight for her place in China on the European battle-fields. Thus Germany alone, as the greatest European military Power, is able to exercise powerful diplomatic pressure on Russia. As, however, the German as well as the Russian Government are imbued with the knowledge that both countries can best further their position in the world and the development of their own countries by a long peace, they have defined their spheres of action and interest in China by peaceful negotiations.

Between the lines of the Russian Treaties of the past century is written "North of the Hoang-ho is Russia's sphere of influence." If the position of our Colony of Kiau-chou be considered, the nearest hinterland of which is the province of Shantung, it must be seen that Germany, in case it does not secure the further provinces between the Hoang-ho and the Yang-ste, in other words between the Russian and English spheres of interest, will be presumably in a few decades in approximately the same modest position in China as the Portuguese and French Colonies are in India proper.

It would perhaps be possible for Germany, whose finances are considerably better than Russia's, to imitate in great style the so successful railway policy of Russia in the sphere of interest given to it by the existing circumstances. This could, however, only be carried out with a large expenditure of money, with military and naval forces and Russian indulgence.

Since Russia's advance in Manchuria has shown how it is inclined to seize any railway concessions, and since that Power and England have respectively secured their spheres of railway concessions, we need not be in doubt one moment that the partition of China has begun. As, however, the Russian territory is always surrounded by great Custom boundaries, and the open-door policy of England will last only as long as it suits her, we are bound to secure as soon as possible, suitable to German trade, a market independent of these countries.

THE NAVY UNDER CROMWELL: ITS STRENGTH AND COST, 1654.[1]

Contributed by CHARLES DALTON, *Esq.*
(*Editor of "English Army Lists and Commission Registers, 1661-1714."*)

THE CHARGE OF THE NAVY.

FOUR THOUSAND seamen, gunners, etc., will sufficiently man thirty-five ships of 30 guns; there being as many ships at sea usually below that strength as above, which numbers (as affaires now are) are a large winter guard; these at £3 10s. per head mensem a peice, amount in charge for the whole to £14,000 per mensem for 6 moneths - £84,000

The summer guard, 6,000 men for 52 ships, will cost per mensem £21,000 for 6 moneths- - - - - - - - - £126,000

Necessary charge to supply the stores of guns, shott, powder, match, and other necessaryes relating to the Navy per mensem £500, per annum £6,000 - - - - - - - - - - £6,000

Necessary charges to be cast in yearly that the Navy may not decay for want of building and repaireing - - - - - - £20,000

At the rate of £50 per head more, counting at £3 15s.—being the Parliament's charge in anno 1645—when shipps were hyred and victualls deare, I say for 4,000 in the winter, for 6,000 in the summer guard, the sum raysed is per annum £15,000 - - - - - - - £15,000

Add unto this one moneth's charges for the seamens pay according to the summer and winter number, there being 13 moneths in every yeare, supposing that one fleet goes out the day that the other fleet comes in, I say then there must be added one moneth's pay for 5,000 seamen, which is £18,750 - - - - - - - - - - £18,750

The totall charge at the greatest rate amountetts to - £269,750

The moneys received yearly by the Customes in England are £400,000. The Forrest of Deane by shott, guns, and iron, payes the Navy yearly £4,000 and reserves the tymber to the State; soe the Customes and the Forrest of Deane will overpay the Navy and Contingencies, besides what the men of warr may raise of forraigners, £134,250.

[1] From a contemporary MS. in the contributor's possession entitled:—"The Report of the Sub-Committee for the Revenue, anno 1654.'

THE NAVY, 1654.

GENERALL BLAKE'S SQUADRON.

	Men.	Guns.
George	350	60
Andrew	300	54
Unicorne	300	54
Langport	260	50
Plymouth	260	50
Bridgwater	260	50
Protector *alias* Worcester	240	46
Newcastle	180	40
Kentish	170	40
Ruby	160	36
Diamond	160	36
Maidstone	160	36
Taunton	160	36
Foresight	160	36
Hamsheere	160	36
Amethist	120	30
Princes Mary	150	34
Elias	140	32
Pearle	100	22
Marmaduke or Meremaide	100	22
Successe	60	24
Hector	35	16
Dolphin	45	16
Sophia	45	16
Hope	40	14
Nonesuch, ketch	30	10
Merlin	60	12
Warwick, pinace	6	3.
Advice, pintce	30	8
	4,241	919

GENERALL PEN'S SQUADRON.

Swiftsure	350	60
Paragon	300	54
Marston Moore	280	54
Torrington	280	54
Gloucester	280	54
Lyon	240	44
Indian	220	44
Mathiors	200	44
Portland	160	40
Lawrell	160	40
Dover	160	40

GENERALL PEN'S SQUADRON—*contd.*

	Men.	Guns.
Great Charity	150	36
Heart's Ease	60	30
Discovery	50	30
Convertyne	60	30
Catherine	60	30
Beare	160	30
Grantham	100	24
Selby	100	24
Halfe	60	28
Gillyflower	50	24
Rose Bush	50	28
Falcon, flyboate	50	24
Adam and Eve	50	20
Wester Gate	40	20
Sampson	40	20
Golden Cook	50	24
Tulipp	40	18
Cardiff	40	18
Pelican Prize	40	18
Little Charity	60	20
Falmouth	50	12
Hound	60	12
Martin	60	20
Marygold	60	20
Crow	60	20
Soe General Pen's Squadron contains in the whole 38 ships	4,230	1,108

The names of the shipps appointed for the Guard and to be Conveys (convoys):—

AT BRISTOLL.

Namptwich	240	36

TO MORLAIX.

Welcome	200	40

AT THE COLLIERY.

Sparrow	60	14

IN THE DOWNES.

Speaker	240	48
Entrance	200	44
Weymouth	60	14

BETWEEN RAMAHEAD AND CAVE.

———	140	36
Tiger	130	34
Yarmouth	140	36

BETWEEN THE ISLES OF BASSES AND USHANT.

	Men.	Guns.
Pelican	140	36
Dragon	130	34
Eliza	130	34
Adventure	150	32

PYING (*sic*) OF CAPE DE HAGE AND CAPE HARFLEUR.

Tredagh	240	48
Newberry	240	48

GOVE CONVEY TO HAMBURGH.

Colchester	100	22

NEWFOUNDLAND.

Reserve	140	36
Nightingale	100	22
Guist	120	32
Paul	100	28

IN THE MOUTH OF THE CHANNELL AND THE COAST OF BRITTANY.

Portsmouth	130	34
Saphire	130	32

IRELAND.

Nonesuch	130	32
Lizard	70	18
Fox	90	22
Greyhound	80	20
Catprice	30	8
Mayflower	70	20
Nicodemus	40	10
Truelove	40	12

SCOTLAND.

Providence	100	28
Primrose	100	22
Islipp	100	22
Briar	80	22
Bazing	100	22
Union	70	—
Satisfacion	100	29
Wren	50	12
Hare, ketch	50	10

NEW ENGLAND.

	Men.	Guns.
Augustine - - - - - -	100	—
Church - - - - - -	100	50
Hope - - - - - - -	100	—

AT WEYMOUTH.

Essex - - - - - - -	220	46

HERRING FISHING.

——— - - - - - -	100	22

JARSEY.

Couvertine - - - - - -	120	32

COMEING INTO THE RIVER.

Assistance - - - - - -	140	36
Advantage - - - - - -	100	26

AT NEWCASTLE.

Plover - - - - - -	100	26
Recovery - - - - - -	90	24
Guiny - - - - - - -	110	30

SEAVERNE.

Little President - - - - -	80	26
Drake - - - - - - -	60	12

HARWICH.

Jarsey - - - - - -	140	36

PORTSMOUTH.

Fairfax - - - - - -	250	40
Lyme - - - - - - -	240	50
Centurion - - - - - -	140	36
Preston - - - - - -	140	36
Middleburgh - - - - -	110	30
Old Warwick - - - - -	80	22

IN SCILLYES.

Deptford, shallopp - - - -	50	6
Hopewell, pintce - - - -	45	10

	Men.	Guns.
In the Hope.		
Bristoll	150	38
Phenix	140	36
At Chatham.		
Sovereigne	600	10
Resolucon	500	80
Tryumph	300	50
James	300	50
Rainbow	280	52
Vauntguard	280	52
Advice	140	36
Gainsborough	140	36
Great President	130	34
Expedition	110	28
Constant Warwick	110	28
Mary, prize	120	27
Henric, pinace	25	7
At Woolwich.		
Nazeby	450	70
Marmaduke	160	42
Wildman	30	12
At Deptford.		
Assurance	120	30
Paradox	60	14
Horseydowne, shallopp	50	6
Mary, flyboat	30	16

NEW NAVAL TACTICAL GAME.

By Captain G. F. KING-HALL, R.N.

THE board and models for the study of naval tactics is an endeavour to provide a means which may prove useful when considering naval tactical questions, and working out different methods of taking a fleet into action.

It has the advantage of bringing the time element into play, and though it can be used as a war game by two or more persons, its primary object is to enable an individual officer to work out naval problems without assistance from others.

Composition of Board.—The tactical board is made of strong mill-board in two folding parts. These are covered with paper, which is lined out, lengthwise and across, so as to form one-inch squares, the scale being 400 yards, or two cables to the inch; thus for a ship moving at a speed of 12 knots on the board, she will pass over one inch in a minute of time, or for 10 knots, if each space represents a minute of time, it also denotes a distance of $1\frac{2}{3}$ cables. When the boards are put together, they show a field of action five by seven miles. At each end and on both sides the number of cables are marked.

Brass Arcs for Turning.—For convenience sake, the arcs are made for a ship turning on a circle of 800 yards (four cables) diameter, and for their doing so in eight minutes (or in later issues of the game for six minutes also). Each minute is denoted by a cut on the brass.

Straight Brasses.—These are marked in cables, two cables to the inch, representing a minute of time, and are used when the ship or ships move in a direction otherwise than on the marked lines on the board.

Angular Brasses are set at a fixed angle of 45°, and show when the whole broadside of the ship is effective. It is placed at the stem of the ship, one arm being in the direction of the ship's course. It is not necessary to use them often, as the angle is so easily seen by the eye.

Models of Ships.—These are represented by small painted metal shapes fitted with a pin for convenience of moving them. The unpainted metal ones (or, in the earlier issues, the parti-coloured ones) denote that they are flag-ships. The black and white represent battle-ships, and the red and green cruisers. They are not to scale.

Gun Fire.—Points are awarded for gun fire (which are approximately correct), and are given for the gun fire from the bow or stern, and that from the broadside, which latter term includes a space 45° before and abaft the beam. Any gun-fire before or abaft this space comes under bow or stern fire.

Rules for Working.—The rules for working out problems, or using it as a war game, which have been found most convenient are, as follows:—

1. *Distance of Fleets.*—Fleets placed any distance apart, but not less than 4,000 yards.

2. *Time Limit.*—If, when playing it as a war game, at the expiration of a minute, no move has been made, the fleets must move on in the direction each is steering.

3. *Signal Made.*—If an evolution is to be made for which a signal is necessary, the player notifies it, and a minute elapses before the signal takes effect, the fleet in the meantime moving on in the direction it is steering.

4. *Altering Course.*—When altering course up to and including 4 points, the ships do not turn on an arc of a circle, but if over 4 points they must do so.

5. *Speed and Diameter during Circle.*—Speed 12 knots 2 cables in one minute.

Diameter during circle, 4 cables in 8 minutes.
" $\frac{1}{2}$ " " 4 "
" $\frac{1}{4}$ " " 2 "

6. *Effective Range.*—Effective range 4,000 yards.

POINTS.

7. *Points for Gun-fire*:—

Bow fire.		Broadside fire.	
1,000 yards and under	- 4 points	1,000 yards and under	- 12 points
2,000 " "	- 3 "	2,000 " "	- 6 "
3,000 " "	- 2 "	3,000 " "	- 4 "
4,000 " "	- 1 "	4,000 " "	- 3 "

8. *Broadside Fire Operative.*—Broadside fire only operative 45° before and abaft the beam.

9. *Distances Measured.*—Distances between ships are always measured and angles taken from the stem of the ship.

GENERAL INSTRUCTIONS.

When placing a ship on the board, the stem is placed at the intersection of two lines. Thus: Flag W = $\frac{14}{20}$. This indicates that the bow of the flag-ship is at the point of intersection, where the line running lengthwise, viz., 14, cuts the line crossing it at right angles, viz., 20, as viewed from the player's end of the board (*i.e.*, the end from which the ship is proceeding).

Example: Two fleets:—White and Black.

Flag W = $\frac{14}{20}$, 6 ships line ahead.

Flag B = $\frac{30}{40}$, 6 ships line abreast.

By putting the flag-ship down at point indicated, the rest of the fleet can be placed at once. If in the middle of a problem or game it is desired to put away the board, by marking the position of flag-ship as

denoted above, and the formation of the fleet, they can be replaced at any time on the board without trouble. For the purpose of keeping a record of moves as made, loose surface lined sheets are used, which can be supplied with the game.

It will be found that eight battle-ships in each fleet is the most convenient number for working with, *i.e.*, if points are taken for each move, which need not necessarily be done.

An example of the movements of two squadrons White and Black of three ships each is given, showing the points gained by each in five positions and four moves from the time of opening fire.

Example.

Flag B $\frac{6}{3\,2}$ 3 ships line abreast (L.B.)
Flag W $\frac{4\,6}{4}$ 3 ships line ahead (L.A.)

Fog lifts, and they discover each other when 2,800 yards off, and immediately open fire. (Points are marked for the shortest distance between the ship of one fleet to the nearest ship of the other, or to that ship which will give the maximum number of points.)

A minute of time interval elapses between each position.

1st Position.

B.	Distance.	Points.		W.	Distance.	Points.	
B^1 ...	2,850 ...	2 ...	Bow fire.	W^1 ...	2,800 ...	2	Bow fire.
B^2 ...	2,800 ...	2 ...	,,	W^2, W^3	No points, not having opened out.		
B^3 ...	2,850 ...	2 ...	,,				
		6				2	

Flag W alters course 4 points in succession to port at once. Flag B moves on same course.

2nd Position.

B.	Distance.	Points.		W.	Distance.	Points.	
B^1 ...	2,100 ...	2 ...	Bow fire.	W^1 ...	2,100 ...	4	Broadside fire [on to B^2.
B^2 ...	2,100 ...	2 ...	,,	W^2 ...	2,400 ...	2	Bow fire.
B^3 ...	2,200 ...	2 ...	,,	W^3	No points, not having opened out.		
		6				6	

Flag B makes signal to turn together 8 points to starboard, but as it takes one minute to answer signal, B Squadron moves on upon the same course for one minute before carrying signal into execution.

3rd Position.

B.	Distance.	Points.		W.	Distance.	Points.	
B^1 ...	1,450 ...	3	Bow fire on W^1	W^1 ...	1,450	6	Broadside on B^1
B^2 ...	1,550 ...	3	,, ,, ,, W^1	W^2 ...	1,750	6	,, ,, B^2
B^3 ...	1,700 ...	3	,, ,, ,, W^1	W^3 ...	2,000	3	Bow ,, ,, B^2
		9				15	

4th Position.

B has now turned 4 points on the semicircle, and consequently some of his ships can bring their broadside fire to bear.

B[1] can only fire bow fire on W[1] and W[2], just failing to bring the latter under her broadside, but can fire broadside at W[3], the latter being slightly to her advantage for counting points, they will be taken :—

	Distance.	Points.			Distance.	Points.	
B[1]	1,450	6	Broadside on W[3]	W[1]	950	12	Broadside on B[1]
B[2]	1,150	3	Bow fire ,, W[1]	W[2]	1,150	6	,, ,, B[1]
B[3]	1,450	3	,, ,, ,, W[2]	W[2]	1,450	6	,, ,, B[2]
		12				24	

5th Position.

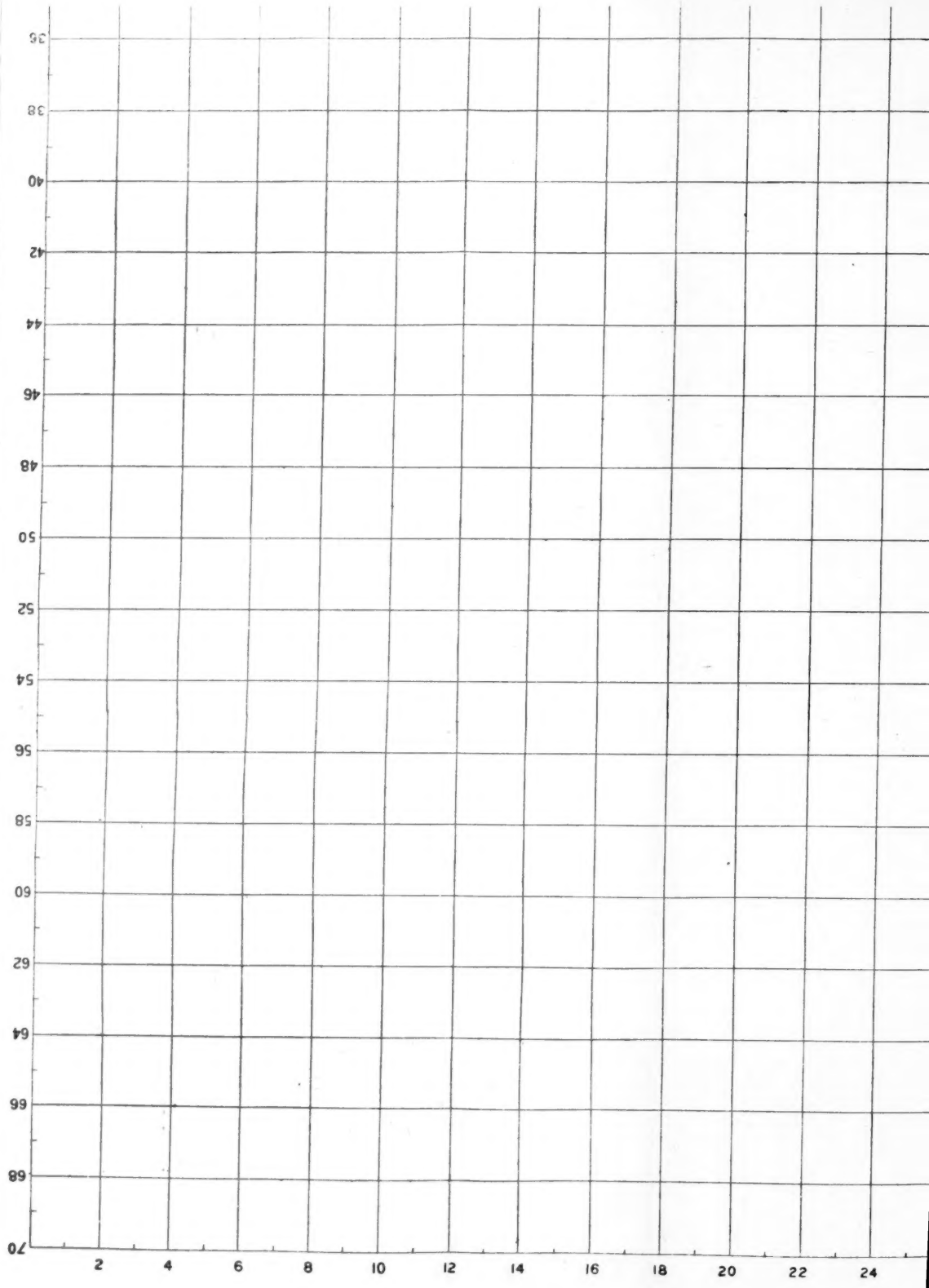
B is now in line ahead :—

	Distance.	Points.			Distance.	Points.	
B[1]	550	12	Broadside on W[1]	W[1]	550	12	Broadside on B[1]
B[2]	850	12	,, ,, W[1]	W[2]	750	12	,, ,, B[1]
B[3]	1,220	6	,, W[1] or W[2]	W[3]	1,050	6	,, ,, B[2]
		30				30	

Final result :—

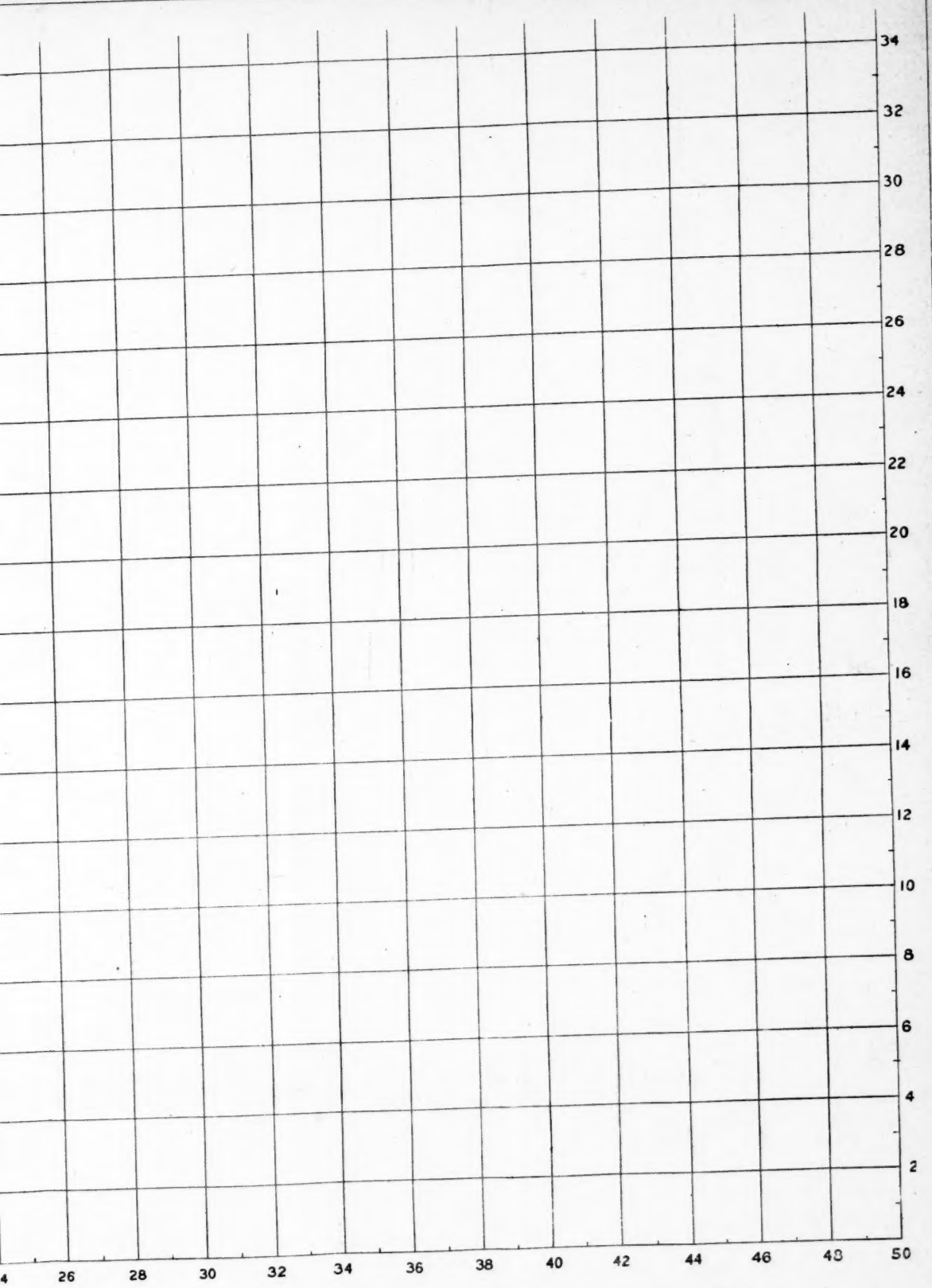
	Black.	White.
1st Position	6 Points	2 Points
2nd ,,	6 ,,	6 ,,
3rd ,,	9 ,,	15 ,,
4th ,,	12 ,,	24 ,,
5th ,,	30 ,,	30 ,,
	63 ,,	77 ,,

Four minutes from opening fire White has had 8·2 per cent. greater gun-fire than Black.



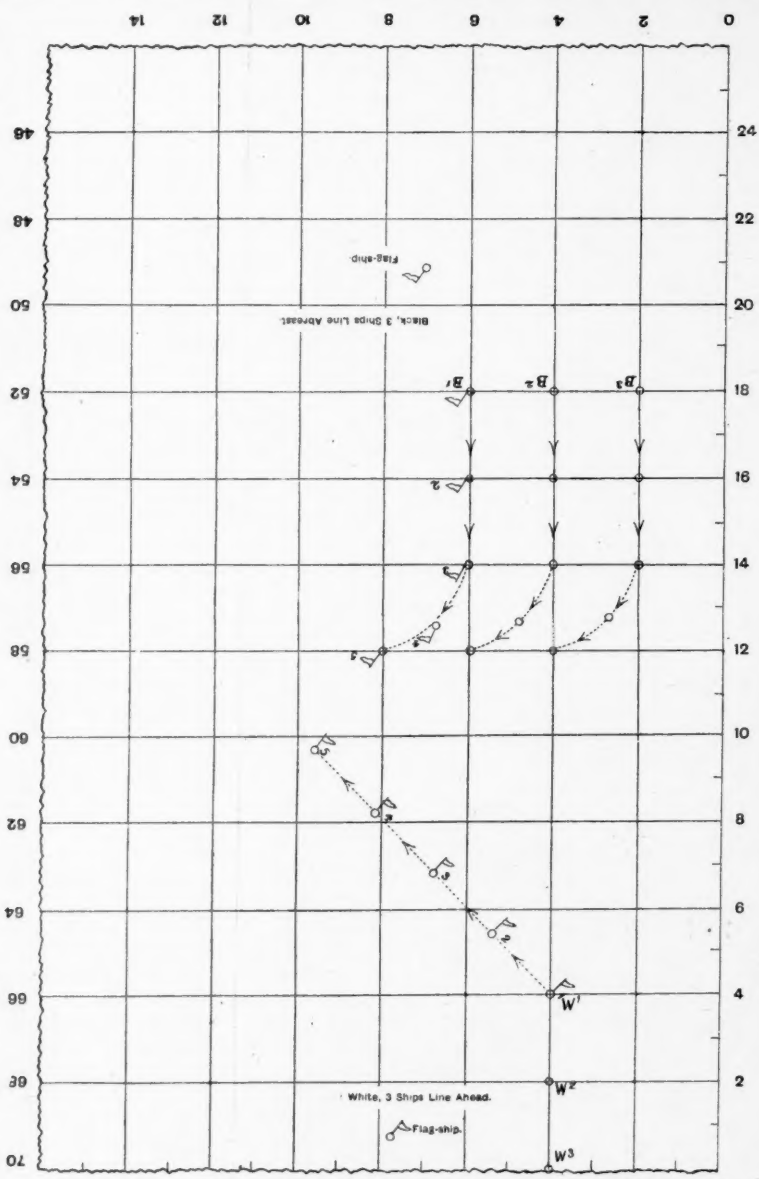
SPEED.		SCALE.
12 Knots	1 Hour	1″ = 2 Cables or 1 minute of Time
2 Cables	1 Minute	1″ = 400 Yards
10 ,, ...	5 Minutes	

REDUCED FAC-SI



FAC-SIMILE DRAWING.

DIAMETER.		TIME.	
Circle	4 Cables... ...	8	Minutes
½ ,, ...	... ...	4	,,
¼ ,, ...	... ...	2	,,



REDUCED FAC-SIMILE DRAWING.

DIAMETER.	TIME.	SPEED.	SCALE.
Circle ... 4 Cables	... 8 Minutes	12 Knots ... 1 Hour	1″ = 2 Cables, or one
½ ,, ...	... 4 ,,	2 Cables .. 1 Minute	Minute of Time
¼ ,, ...	... 2 ,,	10 ,, ... 5 Minutes	1″ = 400 Yards.

SECTION OF BATTLE-FIELD.

J. J. K. & Co., London.

NAVAL NOTES.

HOME.—The following are the principal appointments which have been made: Admiral—Sir R. More Molyneux to be President of Royal Naval College, Greenwich. Captains—H. J. May, C.B., to Royal Naval College, Greenwich; H. D. Barry to "Mars"; S. H. M. Login to "Repulse"; C. E. Kingsmill to "Mildura"; H. P. Williams to "Sybille"; C. H. Cochran to "Minerva"; J. Denison to "Niobe"; F. O. Pike to "Gladiator"; E. P. Jones to "Victory" as flag-captain; Hon. W. G. Stopford to "Pallas"; A. Winsloe to "St. George" as Commodore second class in command of Training Squadron. Commanders—Keppel Wade to "Hibernia"; H. Talbot to "Tyne"; A. E. Tizard to command of Engineers' College; S. A. G. Calthorpe to "Halcyon"; M. G. Cartwright to "Cossack."

Admiral Sir M. Culme-Seymour, Bart, G.C.B., struck his flag as Commander-in-Chief at Portsmouth at sunset on the 3rd inst., and the flag of his successor, Admiral Sir C. Hotham, K.C.B., was transferred to "Victory" the same evening. Admiral Sir R. More Molyneux, K.C.B., succeeds Sir R. Tracey, K.C.B., as President of the Royal Naval College, Greenwich, and Captain H. J. May, C.B., succeeds Captain S. H. M. Login as Captain of the same establishment. The second-class cruiser "Cambrian" paid off at Devonport on the 2nd ult., and her crew turned over to the "Hyacinth," which before taking her place in the Training Squadron has been placed at the disposal of the Committee on Water-tube Boilers. The screw-sloop "Nymphe" commissioned at Portsmouth for the S.E. coast of America and left for her station on the 14th ult. The second-class cruiser "Sappho" left Sheerness for the S.E. coast of America on the 2nd ult. The second-class cruiser "Scylla" commissioned at Chatham to convey relief crew to the Cape for the "Barrossa" and left on the 16th ult. for her destination. The second-class cruiser "Vindictive" left Portsmouth on the 15th ult. for the Mediterranean, convoying torpedo-boats Nos. 63 and 64. The second-class cruiser "Amphion" commissioned at Devonport on the 20th ult. for the Pacific. The first-class cruiser "Europa" arrived at Plymouth on the 22nd ult. with relieved crews from Australia.

On 8th August, 200 men from the Victorian and 240 men from the New South Wales Naval Brigades left Sydney for service in China, while the South Australian gun-boat "Protector," manned by a crew drawn from the South Australian Naval Brigade, left Adelaide on 6th August also for service in China.

Steam Trials.—The new Royal yacht has successfully completed all its trials. If any doubts existed before she left Portsmouth as to her sea-keeping qualities as the result of her unfortunate experience at Pembroke, her actual experience at sea proved that not only was there no longer room for misgiving, but that the yacht is a splendid sea-boat. She left Portsmouth on the morning of Thursday, 9th August, in rain and mist, with the barometer falling rapidly. She was first swung for the adjustment of compasses, and then tried her anchor gear. These operations were concluded by 11 o'clock, and the yacht at once headed for the Channel. Half an hour later, with only twelve out of her eighteen boilers in use, she had worked up to the 5,000-H.P., at which she was required to steam for 48 hours, and the trial at once commenced. On the way down Channel the rain ceased, but

the wind increased to three-fourths of a gale. Darkness had set in by the time she reached the measured course between Rame Head and Dodman Point, and her speed could therefore only be recorded by the Cherub log. In order to be clear of the merchant traffic, the night was spent in steaming between the Lizard and the Scilly Islands, where she felt the full force of the weather, and twice had to turn in altering course. The results exceeded anticipations. In running before the wind the ship was perfectly steady; in steaming against the wind there was some pitching, but her movements synchronised with the action of the waves; and with a beam sea, or in turning, she rolled—the maximum heel was 10°—but she was not slow in righting herself. No seas were shipped, but the funnels bear witness to the heavy weather she encountered, as for more than half their height they are encrusted with salt from the spray that broke over her.

As a sea-keeping ship the yacht appears to have completely atoned for her past errors, while the engines and boilers are no less deserving of confidence. From first to last no question has ever arisen as to the efficiency of the engines and boilers, but in this department the results were more satisfactory than had been anticipated, both in relation to the speed produced by a given H.P. and the economical coal consumption. When the yacht on Thursday night entered the Atlantic and felt the full force of the gale she had twelve of her eighteen boilers in use, and it was decided to light up three more boilers, which naturally increased the consumption, but taking the results as a whole the yacht cannot be described as a coal-eater. At daylight on Friday morning she reached the measured course of 23·2 miles, and the mean of four runs showed that it took 85 minutes 25¼ seconds to cover the distance, giving her a speed of 16·3 knots. As this was her three-quarter speed trial, and as she had a scratch crew on board, the result is equal to anything that the most sanguine anticipated. The pressure at the boilers was 256 lbs., and at the engines 237¾ lbs. The vacuum was 27·3 inches starboard, and 26·75 port, and the revolutions were 113·71 per minute, or 418·55 per mile. Taking the mean of the 48 hours, the record showed that the engines gave 111·5 revolutions starboard and 110·3 port, with 5,142-H.P. The coal consumption worked out at 10,243·3 lbs. per hour, or 1·94 lbs. per H.P. per hour. Exactly 48 hours after the trial commenced the yacht rounded the Isle of Wight, and stood in for Spithead, neither hull, engines, nor boilers having given any trouble.

She left for her second forty-eight hours' run on the morning of Thursday, 16th August, and it is somewhat interesting to note that while the weather was not considered when the programme of trials was drawn up and approved the meteorological conditions were such as to try the vessel under totally different circumstances. At the first run the yacht encountered three-fourths of a gale—ideal sailor's weather—and she came out of the ordeal most creditably. At the second trial the sea was as calm as a millpond, while the wind, such as it was, could only be felt when running against it, and then it was not enough to cool the atmosphere. The only semblance of disadvantage was found in the strength of the current when running her measured distance trials and an occasional haze, both of which points will be noted hereafter. It is gratifying to observe that the most favourable results were obtained from every point of view.

The full power of the yacht is equal to 11,000-H.P., and she was required to steam at 7,600, which is probably her easiest rate, proportionate to speed, for 48 hours; but owing to the fog on the Saturday morning the run was curtailed, so that it actually lasted only 46 hours. Leaving Portsmouth at nine o'clock, the yacht at once stood away for the Channel, and at 10.15, having reached her required power, the trial was at once commenced. Everything was working smoothly, and the entire run was completely successful. The chief interest of the run centred in the stokehold, for there was, for a ship of her size, an unprecedentedly large recording staff noting the weight of every bag of coal as it was removed from the bunkers to the furnaces, so that whatever foundation there may be for the popular suspicion that the consumption returns on certain trials are "doctored" no misgiving was

possible on this occasion. In all other respects the trial chiefly resolved itself into a run against time. The stability of the ship having been thoroughly tested on the first trial in bad weather there was neither the necessity nor the opportunity of testing sea-keeping qualities on this occasion, consequently, when the western coast was reached on Thursday night the yacht made a run into the Atlantic, well beyond the Scilly Islands, returning to the measured course between seven and eight o'clock on Friday morning. It was then found that the haze was too thick to admit of accurate observations on the course between Rame Head and Dodman Point, and Captain A. A. C. Parr, of the Portsmouth Dockyard Reserve, who was in command, determined to make the trial over the seldom used 8·2-mile course from the Start to a point west of Dartmouth. The advantages of this decision were obvious, for while there is deep water in the bay, the points of observation were constantly in view. The steam in boilers throughout the trial was 268 lbs. to the square inch; revolutions, 128·3; I.H.P., 7,625; speed, 18·33; coal consumption, 1·94 lbs. per H.P. per hour. The yacht made four runs over the short course, but so strong was the current that with the tide the best speed was 19·6 knots, and against it the worst speed was 17·3 knots. It will be observed that the coal consumption worked out at exactly the same figure as at the 5,000-H.P. trial. By the time these four runs had been made the haze had lifted, and it was then decided to move down to the 23·2-mile measured course off the Cornish coast. Here two runs were made, one with and one against the tide, and it was curious to find that the recorded speed was identical, down to the minutest fractional point, with that recorded on the shorter course. During Friday night, still continuing her trial, the yacht steamed up to Portsmouth, but at 8.30 the morning mist was so dense that it was considered dangerous to run the ship at a high speed through a crowded waterway, and therefore the trial concluded at the end of 46 hours. As, however, the vessel showed that she could continue to maintain the same speed and power as long as her coal held out, and as no difficulty of any kind had been experienced, the trial was accepted as satisfactory.

The third run was also successful. The yacht left Portsmouth on Thursday, the 23rd, at 10.30 a.m., heading eastward, and at noon, having worked the engines up to 7,500-I.H.P., the course was reversed, and the vessel steamed due west until off the Lizard, when the course was again reversed, and the remainder of the trial carried out between Rame Head and Dodman's Point. On Friday four runs were made over the long (23·2 miles) course between Plymouth and the Lizard, and the result as recorded by the course beacons fully confirmed the readings of the speed logs. Throughout the trial there was a choppy sea in the Channel and at times a heavy ground swell, but the yacht maintained the favourable impression she created on her former trials as regards stability, and there is now no reason to doubt that she is a thoroughly reliable sea boat. From start to finish the boilers and engines worked splendidly. For the 48 hours the mean results were: —Revolutions, starboard 128·2, port 129·7; I.H.P., starboard 3,765, port 3,884—total, 7,649; speed, 18·47 knots; coal consumed per I.H.P. per hour, 1·87 lbs. On the last trial at the same power the vessel recorded a speed of 18·33 knots and a coal consumption of 1·94 lbs.

Two notable features of the trial were the total absence of vibration even through the heavy swell encountered off Plymouth on the Friday, and the very uniform rate at which the engines ran, the variation between the maximum and minimum I.H.P. being scarcely perceptible. It may be mentioned that no other vessel was ever engined with the same conditions as the yacht, as her contract provided that she should carry out three 48 hours' trials at medium speed before attempting the eight hours' full-power full.

The final run at full speed was made on Tuesday, 4th September, and the ship then made four runs over the 23·2-mile measured course. These runs were completed at 7.15, leaving two hours and three-quarters to be employed in the run up Channel. No hitch of any kind occurred, and when near Portland, the trial

being completed, speed was lowered to 14 knots, at which the return home was completed. There was a fairly stiff breeze at the commencement of the trial, but the wind died away, and the run was completed in perfectly smooth water. The official report is as follows :—Draught of water, 18 feet 2 inches forward, 20 feet 1 inch aft ; steam in boilers, 306 lbs. ; vacuum, 25·2 inches starboard, and 25·3 inches port ; revolutions, 147·2 starboard, and 147·6 port ; I.H.P., 5,620 starboard, 5,678 port ; collective I.H.P., 11,298 ; mean air pressure, ·6 inch ; mean speed over the measured course, 20·53 knots. The new yacht has now gone through four trials of unusual severity. She has encountered every kind of weather from gale to calm, and has proved not only a splendid sea boat, but the calculations of the speed she can maintain at a given H.P. have been demonstrated to be mathematically correct.

The special trials of the new sloop "Vestal," built at Sheerness and fitted with engines and Belleville boilers made at Devonport, to ascertain the consumption of water in her Belleville boilers, have proved satisfactory. The six hours' trial at 700-H.P. was attended by four members of the Parliamentary Committee on Water-tube Boilers. Two representatives of the Boiler Committee watched the trial, which proved successful throughout, the boilers working well, and the engines indicating 1,020-H.P. At the conclusion of the trial, the "Vestal" was taken on a short run at full power for the observation of the members of the Committee.

The trial took place off Sheerness on the 19th ult., and proved successful, the details being as follows :—Steam in boilers, 221 lbs. ; steam at engines, 191·5 lbs. ; air pressure, 0·27 inch ; vacuum, 27·5 ; revolutions, 201 per minute ; I.H.P., high, 385·5 ; intermediate, 432·4 ; low, 633·1—total, 1,451 ; speed, 14 knots ; water consumption, 16·8 lbs. per I.H.P. The details of the trial at five-sevenths H.P. were as follows :—Steam in boilers, 226·3 lbs. ; steam at engines, 199·1 lbs. ; vacuum, 27·5 inches ; revolutions, 180·3 ; I.H.P., high, 306·9 ; intermediate, 343·2 ; low, 369·8—total, 1,019·9 ; speed, 12·9 knots ; water consumption, 15·6 lbs. per I.H.P. ; coal consumption, 1·3 lbs. per I.H.P. per hour. The details of the trial at half-power were as follows :—Steam in boilers, 205·2 lbs. ; steam at engines, 173·5 lbs. ; vacuum, 27·5 inches ; revolutions, 161·8 ; I.H.P., high, 196·8 ; intermediate, 251·6 ; low, 279·2—total, 727·6 ; coal consumption, 1·41 lbs. per I.H.P. per hour ; water consumption, 15·53 lbs. The whole of the trials were of a most successful character, both as regards water and coal consumption.—*Naval and Military Record.*

FRANCE. — The following are the principal appointments which have been made : Capitaines de Vaisseau—P. P. A. Lecuve to "Saint Louis" ; J. P. Nayel to "Charles Martel." Capitaines de Frégate—M. J. Fauque de Jonquières to "Durance" ; F. Lecourtois to "Meurthe" ; H. A. Calloch de Kérillis to "D'Assas" ; P. A. Dierx to "Vauban." —*Journal Officiel de la République Française.*

Vice-Admiral de Maigret, the new Commander-in-Chief of the Mediterranean Squadron, has selected Capitaine de Vaisseau Babeau as his Chief of the Staff ; his flag was hoisted on the 1st inst. on board the new first-class battle-ship "Saint Louis," which, having left Brest on the 15th ult., arrived at Toulon on the 24th ult. ; and she takes the place of the "Brennus" as flag-ship, the crew of the latter turning over to her. The "Brennus" is for the time being to be placed in reserve at Toulon, instead of proceeding to Brest, as originally contemplated, to become the flag-ship of the Northern Squadron. The *Yacht* expresses the opinion that the "Brennus" is not suited for service in the Atlantic, as she is a heavy roller, which is not favourable to the system on which her guns are mounted. Rear-Admiral Aubry de la Noë has hoisted his flag on board the first-class battle-ship "Charles Martel" at Toulon in succession to Rear-Admiral Roustan, whose

term in command of the 2nd Division has expired; he has appointed Capitaine de Frégate Ducrest de Villeneuve as his Chief of the Staff. Rear-Admiral Gourdon, who has been appointed to the command of the newly constituted cruiser division of the Northern Squadron, has selected Capitaine de Frégate Goudot as his Chief of the Staff; he will hoist his flag temporarily on board the first-class armoured cruiser "Bruix"; but later will transfer his flag to the "Pothuau," at present the flag-ship of Rear-Admiral Caillard, in command of the cruiser division of the Mediterranean Squadron, when she in turn is relieved by the new first-class armoured cruiser "Jeanne d'Arc."

A telegram has been received from Rear-Admiral Courrejolles in China reporting the explosion or ignition of a heavy gun cartridge in the magazine of the "Vauban" at Nagasaki.

A similar explosion took place in the magazine of the "Amiral-Duperré" in 1896 with a cartridge weighing 60 kilos (132 lbs.) of smokeless powder. The accident was attributed at the time to the high temperature of the magazine, the new powder, it is said, being found to be unstable in heated positions of stowage. In new ships attention is paid to this, and the steam pipes are placed as far as possible from the magazines, but in the "Vauban," an old ship, this was probably not so. It is significant that though in both these cases the cartridge ignited in the magazine or handling room, that there was no general explosion, showing the safety of the new powder in this respect.

Wireless telegraphic instruments have been installed successfully at Ushant under the supervision of Lieutenant Tissot, Professor of the Borda. It is intended to make a similar installation at Corsen, Île de Batz, and Penmarch.

Movements of Ships.—It is stated that it is in contemplation to form another battle-ship division in the Mediterranean before the end of the year. This division will, so it is said, consist of the first-class battle-ships "Formidable," "Amiral-Baudin," and "Hoche"; they will be under the command of Rear-Admiral the Marquis de Bausset, who is to hoist his flag in the "Formidable" on the 26th November, with Capitaine de Frégate Didelot as his Chief of the Staff, and their headquarters are to be at Bizerta, where the necessary work for organising the great dockyard and arsenal, to be formed in this magnificent harbour, is being pushed on with great activity by the commandant, Capitaine de Vaisseau Merleaux-Ponty.

The second-class cruiser "Catinat" was commissioned at Brest on the 15th ult. for service as senior officer's ship in Madagascar. The second-class cruiser "D'Assas" has been detached from the Mediterranean Squadron to join the Squadron of the North, where she will form part of the newly constituted cruiser division; she left Toulon on the 1st inst for Brest. The armoured gun-boat "Achéron," which has been relieved as stationaire at Bizerta by the coast-defence battle-ship "Tempête" has been paid off and placed in the Second Category of the Reserve at Toulon. The third-class cruiser "Cosmao," which has been relieved as one of the stationaires at Constantinople by the torpedo-aviso "Vautour," has been paid off at Toulon, the second vessel at Constantinople is the despatch-vessel "Étoile." The torpedo-aviso "Lévrier" has been commissioned and will be attached to the *Défense-Mobile* at Corsica, which is being steadily strengthened year by year. The third-class cruiser "D'Estrées" has been commissioned, and has left Brest for the West Indies, where she relieves a sister-ship, the "Troude." The torpilleurs-de-haute-mer "Turco" and "Averne" have left Toulon for Bizerta, where they will be attached to the *Défense-Mobile* The aviso-transports "Durance" and "Meurthe" were commissioned on the 1st inst. at Rochefort and Brest respectively to relieve the "Aube" and "Eure" in the Pacific.

Steam Trials.—The new first-class cruiser "Chateaurenault" has been continuing her trials off Toulon successfully; with the engines developing 14,000-I.H.P.,

the engines made 112 revolutions, giving a speed of 20·5 knots with a coal consumption of only 660 grammes per H.P. per hour; with the engines developing 18,000-I.H.P., and making 120 revolutions, she averaged for two hours 22·6 knots; it is therefore considered certain that with the engines developing the full 23,000-I.H.P. her contract speed of 23 knots will be exceeded. The first-class battle ship "Hoche" has made another 6 hours' coal-consumption trial; the engines developed 2,256-I.H.P., making 51·7 revolutions, giving a speed of 10 knots, with a coal consumption of 967 grammes per H.P. per hour. The new torpedo-boat destroyer "Pique" has made an unsuccessful full-speed trial off Cherbourg, the engines making 288 revolutions, giving a speed of 24·8 knots, which is much below the contract. The new torpedo-boat destroyer "Espingole" has also been making a full-speed trial off Cherbourg; with the engines making 300 revolutions a mean speed of 27·2 knots was maintained, which was considered satisfactory.

Dockyard Notes.—The Minister of Marine has directed that the old battle-ships "Colbert," "Trident," and "Richelieu," with the despatch-vessel "Inconstant," are to be struck off the effective list of the fleet; all four ships are in the Reserve at Toulon, and the three larger ships will be used as floating barracks for the men of the 5th Depôt.

Bilge keels are to be fitted to the vessels forming the Coast-Defence battle-ship Division, and the work will be carried out at Cherbourg, which is to be the headquarters of the squadron for the coming winter.

Work is being pushed on as rapidly as possible with the new second-class battle-ship "Henri IV," but delay is being caused by the non-delivery of her machinery; nearly the whole of the armour is in place, and the turrets for the heavy 27·4 centimetre guns (10·8-inch) are completed and the guns in position; these can be worked either by hand or electricity; the turret for the 13·8 centimetre (6-inch) Q.F. gun is also finished and the gun mounted. The coast-defence battle-ship "Requin" is also well advanced; she has received the new turrets for her 10·8-inch guns. Her new water-tube boilers are on the Niclausse system, and are in place; but the removal of part of her old heavy armour and substituting lighter and more modern armour has been abandoned for the present; the giving her new boilers and new guns being considered sufficient refit for the time being. Every effort is being made to complete the new first-class battle-ship "Iéna," the Minister of Marine having directed that she is to be commissioned as soon as possible to join the Squadron of the North; but it is not expected that she will be ready for service for four or five months yet.

Wreck of the "Bouet Willaumez."—The torpilleur-de-haute-mer "Bouet Willaumez," belonging to the *Défense-Mobile* of Cherbourg, while cruising off that port on the morning of the 1st inst. in foggy weather, struck on a rock near Bréhat and sank, the crew being saved by torpedo-boat No. 108, which was in company with her. She was used with other torpedo-boats for training a special corps of petty officers, called torpedo-boat pilots, so that every torpedo-boat in time of war may have a thoroughly competent pilot on board, fully acquainted with the numerous reefs and banks which surround the French coast. All attempts to re-float the boat have been given up as hopeless.

Launch.—The torpilleur-de-haute-mer "Audacieux" was launched on the 29th August at Nantes. She is of the same name and class as the torpedo-boat which sank off the coast of Corsica in 1896, in consequence of a collision with the torpedo-boat "Chevalier." She is of the "Cyclone" type. Her dimensions are as follows:—Length, 147 feet 8 inches; beam, 15 feet; draught, 8¼ feet; displacement, 150 tons; her engines are to develop 4,250-I.H.P., giving a speed of 30 knots; armament, two 1·85-inch guns and two torpedo-tubes; radius of action, with 18 tons of coal, 1,800 miles at 10 knots, or 200 miles at 30 knots.—*Le Yacht* and *Le Temps*.

The Naval Estimates for 1901.—The Estimates submitted to Parliament by the Minister of Marine for the ensuing year amount to 329,286,699 francs (£13,971,468) being an increase in excess of the Vote for the current year, which amounted to 312,776,332 francs (£12,511,053) of 16,510,367 francs (£660,415).

The increase is made up as follows :—

	Francs.	£
Personnel of the different branches of the Fleet ...	2,556,953	(102,278)
Naval Construction	4,120,197	(164,808)
Service of the Fleet	1,621,279	(64,851)
Guns, etc.	467,300	(18,692)
Hydraulic Works	5,207,117	(208,285)
Submarine Defences	933,400	(37,336)
Supplies, Provisions, etc.	1,981,640	(79,266)
Clothing, Barrack Expenses, etc.	275,508	(11,020)
Allowance to the "Caisse des Invalides" ..	311,000	(12,440)
Fisheries, etc.	12,800	(512)
Total	17,487,194	(699,488)

The diminutions are as follows :—

Personnel of the different branches of the Fleet	740,727	(29,629)
Hospitals	10,000	(400)
Hydrographical Service	40,000	(1,600)
Expense of the Exhibition	186,100	(7,444)
Total decrease	976,827	(39,073)
Total net increase	16,510,367	(660,415)

Programme of Armaments.

The previsions for the armaments for 1901 differ but little from those of the current year.

Mediterranean Squadron.—The composition of this force in battle-ships remains the same as in 1900. The number of armoured cruisers is not modified, but the "Jeanne d'Arc," a perfectly new ship of this class, is to take the place of the "Chanzy" for four months.

The number of second-class cruisers is decreased by one, the "D'Assas," and the "Infernet," one of the third-class cruisers, will only remain for three months with the squadron, the time necessary for her to complete her contract trials, before she proceeds to the East Indies.

These reductions will allow of the *personnel* of the third-class cruisers and torpedo-boat destroyers being maintained at full strength for the whole year, without any increase of cost, instead of having reduced complements for six months of the year, as in 1900.

Coast-Defence Battle-ship Squadron.—No change is contemplated.

Squadron of the North.—The number of battle-ships remains the same as in 1900, but a new ship, the "Iéna," is to take the place of the "Amiral Baudin."

The first-class cruiser "Guichen" and the third-class cruiser "D'Estrées" have been struck off the strength of the squadron, the first-named ship having been transferred to China, and the second to the Atlantic Division.

As has been done in the Mediterranean Squadron, all the torpilleurs-de-haute-mer will be replaced before the new year by torpedo-boat destroyers ; one of these, however, the "Durandal" has been detached from the squadron to form part of the *Défense-Mobile* at Dunkirk.

The ships of the squadron will have full complements for six months and reduced for six, as in 1900.

Tunisian Naval Division.—No change.

Atlantic Division.—The numerical composition of the squadron remains the same. But in May the first-class cruiser "Cécille" will be replaced as flag-ship by the "Tage," a sister-ship; the third-class cruiser "D'Estrées" is to relieve a sister-ship, the "Troude."

Eastern Pacific Division.—The only modification in the composition of the squadron will be the relief of the schooner "Papeete" by the new gun-boat "Zélée," a vessel better suited for work among the Society Isles and neighbouring archipelagoes; in no circumstances could the "Papeete" have been relieved by a similar vessel, as there are no more of her class in the Navy.

China and Western Pacific Division.—In addition to other ships provided for in the Budget of 1900, the first-class cruiser "Guichen" will be added for the whole of 1901. The first-class gun-boat "Surprise" was to have been relieved by the "Zélée," but this has now been cancelled.

Cochin-China Division.—Remains the same as in 1900, but the second-class cruiser "Duguay-Trouin" no longer figures in the Reserve, as she has been struck off the effective list of the Navy.

Indian Ocean Division.—Some important modifications have been made in the squadron, which will now have a certain fighting value, while formerly it had none. The wooden third-class cruisers "Nielly" and "D'Estaing" are to be replaced by the cruisers "Catinat" and "Infernet," modern vessels of the second and third-class respectively. The aviso-transport "Pourvoyeur" is to be paid off at Diégo-Suarez, but no vessel is to take her place.

Newfoundland Fishery Squadron.—No change.

In the North Sea, the torpilleur-de-haute-mer "Alarme" takes the place of the "Lansquenet."

Training Squadron.—The cadet training-ship "Iphigénie" has been struck off the effective list, her place being taken by the "Tonquin," which in future is to be called the "Duguay-Trouin." The transport "Vinhlong" is to take the place of the battle-ship "Marceau" as torpedo-school.

Algerian Division.—No change.

Constantinople.—The third-class cruiser "Cosmao," since relieved by the torpedo-cruiser "Vautour," is detailed to act as a second stationaire.

Ships on Trial.—A large number of new ships will make their trials during 1901. The principal ones will be: the battle-ships "Henri IV" and "Suffren"; and the armoured cruisers "Jeanne d'Arc," "Dupetit-Thouars," "Amiral-Gueydon," "Montcalm," and the protected first-class cruiser "Jurien de la Gravière."

Ships in Reserve.—The entry into service of a number of new ships entails a corresponding increase in the numbers of ships in the Reserve. In order to compensate in some measure for the increased cost which results, the Budget for 1901 provides that all ships under repair will have their complements reduced to the lowest scale, while they remain ineffective.

The Défenses-Mobiles.—There is to be a new distribution of torpedo-boats, and some new ones and submarine boats are to be commissioned.

The school for stokers is still on too small a scale, in spite of the efforts made to enlarge it. Two torpilleurs-de-haute-mer are to be commissioned for the use of the pilotage school in the Mediterranean.

The torpedo-aviso "Casabianca" has been added to the strength of the *Défense-Mobile* at Bizerta.—*Budget des Dépenses du Ministère de la Marine.*

JAPAN.—*The New First-class Battle-ship "Asahi."*—This fine addition to the Japanese Navy, having successfully concluded her trials, left for Japan on the 1st August, and arrived at Hong-Kong on the 9th inst. Her trials before leaving England over the measured mile gave the following results:—613-I.H.P., 6·69 knots; 1,610-I.H.P., 9·28 knots; and 4,355-I.H.P., 13·06 knots. *Data* having been

obtained of the speed at the lowest H.P.'s, the ship on the following day carried out her high-speed coal-consumption trial, which was completed at 5 o'clock the same evening, the result showing that at 12,947-I.H.P. the consumption was only 1·59 lbs. per unit of power per hour. There was a high wind and a heavy sea, but the records taken gave an approximate speed of 17·5 knots. The ship then put in at Plymouth to clean boilers, and the next day started on her full-power trial between Start Point and Berry Head, a distance of 12·26 knots. Four runs were made, the first and third being in the teeth of a north-easterly gale; but with this disadvantage the mean speed was 18·3 knots. The speeds on the four runs were:—First run, 17·92 knots; second, 18·08; third, 18·65; fourth, 18·3. The mean I.H.P. for the entire series of runs was slightly over 16,000. After the full-speed trial circles were made to port and starboard with each steam-steering engine with the vessel still at full-speed; and at a speed of 15 knots the hand-steering gear was successfully tried. On the return to Spithead, at 17 knots, the stopping, starting, and reversing trials were carried out.

The "Asahi," built and engined at the works of Messrs. John Brown & Co., Ltd., Clydebank, is one of the most formidable battle-ships afloat. Her principal dimensions are:—Length between perpendiculars, 400 feet; length over all, 425 feet; beam, 75 feet; mean draught, 27 feet 3 inches. Her displacement at this draught is 15,200 tons, or 200 tons in excess of the British battle-ship "Formidable." The armament, of Elswick design and manufacture, consists of four 12-inch wire-wound guns, mounted in pairs forward and aft; fourteen 6-inch Q.F. guns (two more than the "Formidable"); twenty 12-pounders and sixteen smaller guns, with four submerged torpedo-tubes. The 12-inch guns are carried at a commanding height above water, and each pair has an arc of training of 240°, or 120° on each side of the fore and aft line of the ship. They stand in armoured redoubts, and all loading and sighting operations are carried on under cover of armour. Eight of the 6-inch Q.F. guns are carried on the main deck and six on the upper deck. Four of these guns can be trained directly ahead and four astern, while the total arc of training of each of the 6-inch guns is 120°. Each gun of this class is enclosed in an armoured casemate. The submerged torpedo-rooms are situated fore and aft, and there are two tubes in each room.

The armour, which has been provided from the Sheffield works of the contractors for the ship, possesses some interesting features. The main belt, which is 9 inches thick and 250 feet long, extends from 5 feet 3 inches below to 3 feet above the normal water-line, while above the main belt, and extending to the main deck, there is a supplementary belt of the same length 6-inch in thickness. Armoured bulkheads extend athwart the ship at the ends of this belt and enclose the bases of the redoubts, while the water-line is protected before and abaft the main belt by a strip of armour, this additional armour being so strengthened at the bow as to resist attack in that quarter. The redoubts are protected by 14-inch armour, and the casemates have a maximum thickness of 6 inches. The whole of this armour has been treated by the latest nickel process, but, owing to curvatures the conning-towers are built of Harveyized steel that has not been so treated. By means of a heavily-armoured communicating tube precaution has been taken for the safety of the steering connections, engine-room telegraphs, and voice pipes.

Provision has been made to avoid the crossing of lines in the supply of ammunition to guns of different calibres, and, therefore, for a minimum of transport and for simplicity and certainty in time of action. The 12-inch guns are served, trained, and loaded by hydraulic power, and all the other guns are worked by hand. There is a total bunker capacity of 2,000 tons, and, therefore, according to the 80 per cent. of her full-power consumption trial, the ship has a radius of action, at 17½ knots, of about 4,000 miles with a proportionately higher radius at more economical speeds. The "Asahi" is lighted throughout with electricity and carries six search-lights and about 800 incandescent lamps. She has accommodation for an admiral and staff and a complement of 800 officers and men.—*Times and other sources.*

RUSSIA.—The following are the principal appointments which have been made: Vice-Admiral—Skrydlov to command Pacific Squadron. To be Vice-Admiral—Rear-Admiral Kashereninov, now in command of a composite body of Seamen Battalions at St. Petersburg. Captain—Boisman to command torpedo-boats and crews at Port Arthur.

New Ships.—The new second-class protected cruiser "Boyarin," now building at Messrs. Burmeister and Veyns' Yard at Copenhagen, is to have a displacement of 6,500 tons, and engines of 19,500-H.P., which will give her a speed of 22 knots. Her armament will consist of twelve 120-millimetre Q.F. guns of 45 calibres, twelve 76-millimetre Hotchkiss guns, and two machine guns. Her torpedo equipment will be four above-water and one under-water tubes, and her cost £300,000. She is the third vessel built by the firm for the Russian Navy.

The new first-class battle-ship "Kniaz Suvarov," preparations for building which are now being made at the Baltic Works, is to have a displacement of 13,600 tons and twin-screw engines, each of 8,150-H.P. receiving their steam from 20 water-tube boilers of the Belleville pattern. She will not be sheathed with wood. Her armament will be four 12-inch guns, twelve 6-inch Q.F., twenty of 75-millimetre and some smaller quick-firers and machine guns. She is to be armoured all her length at the water-line, the greatest thickness of armour there being 10 inches, and with a belt of light armour above. Her stem and stern posts will be cast of steel at the works. Some 80 auxiliary engines will be worked by six steam dynamos with a current of 1,000 ampères each. Both engines and boilers will be produced at the works, of their own materials. She will be of much the same type as the "Borodino," "Oryel," and "Imperator Alexander III." the latter of which is being built at the same yard.

The torpedo-vessels "Osiotr," "Kefal," and "Losos" are of much the same type as French vessels of the same class; they are now under construction at Havre, at the Forges et Chantiers de la Méditerranée, and are of 312 tons displacement. One of them was launched in August; the rest will soon be ready. The water-tight bulkheads, 9 in number, will be made of steel in the same way as in battle-ships, and will be subjected to a severe test. The engines and boilers are of the Normand pattern, and their water-ejecting apparatus will consist of a centrifugal pump, 8 steam-ejectors with a capacity of 100 tons per hour, and two of 20 tons.

The torpedo-boats being built at the Neva Works under the design of the Yarrow firm are to have Yarrow engines. The total grate area of the boilers is about 12,800 square feet, the pressure of steam being 250 lbs. to the square inch. On board the four large torpedo-vessels, which are being built at Schichau, there will be fitted engines of triple-expansion of the Schichau system. The water-tube boilers are furnished by the same makers. They will have fifteen water-tight bulkheads, twelve running from the keel to the upper deck. The rudder is fitted for steering by hand as well as by steam. On each side of the four boiler compartments are placed coal bunkers estimated for more than 80 tons of coal. It is worthy of notice that in berthing the crews the chests and lockers will be made of aluminium. The water-ejecting gear will comprise ejectors and a centrifugal pump in the engine compartment. They will be lighted throughout with electricity. The external and deck sheathing will be of special steel, which will withstand a strain of from 34 to 40 tons to the square inch at a distension of 15 per cent. to 8 inches of length. The screws will be made of bronze, and they are all to attain a speed of 27 knots at least on trial under a heavy penalty.

Shortly there will be taken in hand at the Neva Works two fast cruisers with armoured decks, each of about 3,000 tons displacement, and five destroyers of large size. The cruisers will be 350 feet long, with 40 feet beam, and have a ship's company of 300 men. Their armament will consist of 120-millimetre (6-inch) Q.F.,

47-millimetre, and other guns, and they will have 6 torpedo-tubes each, and an ordinary coal supply of 400 tons, though the bunkers will have capacity for some 250 tons more. Cofferdams will be constructed over the armoured deck. They will have 3 vertical engines each of triple-expansion, and 4 funnels, and water-tube boilers, with a speed of 25 knots, and will cost some 3,000,000 roubles. They will be scouts of the "Novik" class, and the engines are to develop 18,000-I.H.P., giving a speed of 25 knots.

The fast second-class cruiser "Novik," under construction at the Schichau Works at Elbing, was launched 15th August; she has a displacement of 3,000 tons, the hull being of steel, and the double-bottom extending throughout the engine and stoke-hold compartments. Coal bunkers run the whole length of the engines and boilers, and the deck is armoured throughout, and descends 3 feet 3 inches below the load water-line, the curved part being 2 inches and the horizontal 1¼ inches in thickness, and all the engine and stoke-holds lie under it. The engines are triple-expansion, 3 in number, on the Schichau system, to develop 17,000-I.H.P., giving a speed of 25 knots. There are 12 water-tube boilers, also of the Schichau model, the heating surface of them combined being some 48,450 square feet.

On the 9th inst. an addition was made to the Black Sea Fleet by the launch of the "Kniaz Potemkin Tavricheski," a battle-ship of 12,585 tons displacement, almost exactly of the same type as the "Tri Sviatitelia." The hull is of soft Siemens-Martin steel, and she has been launched with part of her engines standing. Special care has been taken with her water-tight compartments, while her water-ejecting system is of the turbine order, each of the eight turbines expelling 750 tons in an hour. All the vital parts are protected, the armoured deck being 3 inches thick, and the armour of the belt and turret 10 inches, and on the casemate 5 inches thick. Her main armament is to consist of four 12-inch guns of 40 calibres, fifteen 6-inch guns of 45 calibres, and fourteen 75-millimetre, sixteen 37-millimetre, quick-firers, and two Baranovski boat guns. The carriages are supplied by MM. François, Delois & Co. The engines, of 10,600-H.P., are the work of the Nicolaev Building Works, and the 14 Belleville boilers will be disposed in groups in water-tight compartments. There are two triple-expansion engines. The torpedo apparatus is to consist of five ejecting tubes, four under water on the broadside, and one in the bows. She is to make four runs in calm water, and the engines must not develop less than 10,600-H.P., with a speed of 17 knots, the expenditure of coal for each H.P. being 2 lbs. The elements of stability are as follows:—Elevation of transversal metacentre above the centre of dimension, 17 feet; and above the load water-line, 5½ feet; ditto of longitudinal metacentre, 870 feet; with a draught on an even keel of 27 feet.

At the Varkhaus Works in Finland two ice-breakers are being built for Port Arthur. They are practically completed, and will soon be dispatched in sections. Also for Port Alexander III. a similar ice-breaker on the water-ejecting system will be ready in autumn, and one for Cronstadt in next autumn.

At the New Admiralty Yard at St. Petersburg progress is being made with the new coast-defence ironclad "Admiral Boutakov," of an improved type of the "General-Admiral Apraxine" class, and of 5,985 tons displacement. Her length at the water-line is 341 feet 6 inches, extreme beam 59 feet 3 inches, and draught 17 feet 3 inches. Her armament will consist of six 8-inch guns of 45 calibres, in pairs in the turrets forward and aft, and one in each turret amidships; eight 47-millimetre guns in an armoured casemate, and eight more 47-millimetre guns and 4 Maxims. She has an armoured belt all along the water-line, the maximum thickness of which is 7 inches above and 5 inches below throughout the most vital parts, diminishing at bow and stern to 4 inches. The armoured deck is 1 inch thick, but over the engines it increases to 2½ inches, the turrets having 6-inch armour, and the ammunition tubes 5½-inch. Her torpedo gear

consists of two under-water broadside tubes, and four above-water tubes. Her crew will consist of 472 men, and she is to have two military masts. Her two triple-expansion engines give her a speed of 16 knots at normal draught. Her ordinary supply of coals is 300 tons, and full supply 583 tons. There are 12 Belleville boilers with economisers. Her radius of action is 750 miles, or, with special economy of coal, 1,400.

The steamer building at Newcastle, at Hawthorn, Leslie & Co.'s, for the Volunteer Fleet, has the following principal dimensions:—Length, 470 feet; beam, 58 feet; and draught, 24 feet 6 inches. She is christened the "Smolensk," has a displacement of more than 12,000 tons, and her two triple-expansion engines are to give a total of 16,500-H.P. on trial. She has 24 Belleville boilers, and the extreme speed which she is to develop is 20 knots, but the ordinary speed will only be 13 knots. Her total coal capacity will be 7,000 tons, and the total capacity of her holds 300,000 cubic feet, while she can carry 1,000 troops. Her armament when used as a cruiser will consist of 120-millimetre (6-inch) Q.F. and 75-millimetre guns. She is much of the type of the "Moskva," though with some important differences, and has a greater displacement. She will be launched very shortly, and after her trials, which will be at the expense of the company, she will at once proceed to the East. Her cost is some 300,000 roubles.

The dimensions given for the protected cruiser to be built at the new Windau Works are:—Displacement, 6,300 tons; length between perpendiculars, 412 feet; beam at water-line when fully loaded, 53 feet 6 inches; draught, 20 feet 8 inches. The speed is to be 23 knots, like the "Variag," which she resembles in type, and the two engines are to give some 20,000-I.H.P., the boilers of the Normand system. It is proposed to build at the same works a battle-ship of 12,700 tons, with a very powerful armament, and a speed of some 18 knots.

Trials.—The result of the official trials of the new first-class battle-ship "Sevastopol" are as follows:—Port engine with 143·88 lbs. pressure of steam and 84 revolutions, mean of six series taken:—

Cylinder, highest pressure	... ...	1,441·83	H.P.
,, medium ,,	... ...	1,515·32	,,
,, lowest ,,	... ...	1,673·56	,,
Total	... ...	4,630 71	,,

Starboard engine at 143·5 lbs. pressure and 881·4 revolutions, mean of six diagrams:—

Cylinder, highest pressure	... ...	1,534 79	H.P.
,, medium ,,	... ...	1,555·01	,,
,, lowest ,,	... ...	1,647·06	,,
Total	... ...	4,736·86	,,

Or a united I.H.P. for both engines of 9,367·57, or 1,232·43 less than contract.

The official trials, conducted in America at the Cramp Works, of the first-class cruiser "Variag," gave a maximum speed of 24·6 knots and a mean speed on a 7½ hours' trial of 23·7 knots, the Niclausse boilers and engines working quite satisfactorily. During the specified time all went well, but towards the end of the trip there was a mishap to the high-pressure cylinder of one of the engines, but no one was hurt. In spite of this, the trial was unanimously pronounced satisfactory.

Some further particulars as to the trials of the "Variag" go to show that the speed of 23 knots is well within her reach. She has two engines placed in water-tight compartments separated by a bulkhead running fore and aft. These are of triple-expansion, with four cylinders, fed by water-tube Niclausse boilers. The condensers are of such power that they will provide a constant supply of fresh water to replace the loss of water throughout the radius of action at full steam. The test applied is four consecutive trips at full speed on the measured mile in deep and

smooth water. The penalty for each quarter of a knot deficient is 50,000 dollars between 22 and 23, and 35,000 dollars, between 21 and 22. If the speed is less than 20 knots the cruiser will not be accepted. The expenditure of coal at full pressure of the engines must not exceed 2 lbs. per H.P. per hour.

Port Arthur.—The climate of Port Arthur is one which must try the energies of the inhabitants to the utmost; at least, in the current year. "Just as you have a south wind," writes a visitor to that place, "there comes a sharp frost such as would not disgrace Mother Russia. No sooner have you wrapped yourself up to meet these conditions, when they abruptly vanish again, and the ladies turn out in their summer dresses. The gardeners hasten to dig trenches and plant their flowers, and in the evening there is a frost again, and such snow that you could not get along in a sledge. The wind also penetrates readily through the crevices of the Chinese houses, and the damp is terrible to deal with." In spite of these atmospheric conditions, people are both cheerful and energetic, and endeavours are made to bring the place up to the English standard of resource; lawn tennis and the like being in high favour. The feverish activity that reigned in the early days in the matter of work has, indeed, markedly relaxed, but the Arthurian is none the less never idle. A great deal of money, amongst other things, has been spent on charity. The old town is gradually being wiped out, but much delay was caused by the uncertainty as to where at all they were going to build, and this was pending the arrival of the new Governor. This was not the case with regard to its neighbour, Daluz, as the ground was all level, and the *fiat* left no room for doubt. A long and slow work of preparation was imperative. Cement is in preparation in vast quantities, and there are three large local quarries. There are colonies of Sakhalin and Olovets workers employed, who vie with each other in completing such work as will bear transfer and transport. As for water, which has been the chief difficulty in so many places, two wells have been dug, and it is hoped that the water thus acquired will be fit for consumption. The whole scene far more resembles an American than a Russian one for activity and bustle, and the rapidity with which things are pushed forward. The branch railway will be united with the main line before long. A good deal of initiative has been left to the people on the spot. Some 200 Russians were in charge of some 7,000 natives, a number which was likely to be increased. Whether it is the material prospect that causes it in spite of climate, great cheerfulness prevails. The Chinese, it may be noticed, make use of every little thing, to the greater glory of their ancestors.

A curious feature of Russian naval matters in regard to Port Arthur is that torpedo-boats are largely sent out there in sections. The new yard to be constructed there will be devoted almost exclusively to torpedo-vessels, either new or sent out in this way. The slips will be wooden, and their first work will be the putting together of ten torpedo-vessels, seven sent by the Neva Works and the remaining three by the Admiralty Ijora Yard. This method of sending them out is attended with not a little difficulty; owing to the fragility of the construction it is very difficult to pack the sections without damage, the thickness being often as little as $\frac{1}{32}$ of an inch, but practice has enabled the Russians to largely overcome this difficulty. Still for the future it will be possible to have them built on the spot, which will be a great advantage, and in time no doubt larger vessels will be able to be put on the stocks.—*Kronstädtski Viéstnik.*

UNITED STATES.—*Submarine Navigation.*—In view of the United States Navy Department having signed a contract with the Holland Submarine Torpedo-boat Company for the purchase of the "Holland" at the price of $150,000 (£31,250), and agreed to pay $175,000 (£36,458) each for further boats of the "Holland" type, the following article by Mr. J. P. Holland, the inventor of the submarine boat, will be read with interest:—

Submarine navigation will always have its limits. We know what those limits are, however, and already we are in a position to build vessels which will

approach them very nearly. As the appreciation of these limits is very necessary in dispelling such illusions as the "Twenty Thousand Leagues under the Sea" dream of Jules Verne, it is well that they should be stated at the outset. Navigation under the sea can by no possibility be carried on at a depth greater than 300 feet. The pressure of the water below that depth is so great that any boat man could build would be crushed. It is impossible for a man to work under water lower than 150 feet below the water's surface. Again, it will never be possible for submarine boats to travel as fast as vessels on the surface. This is because a vessel under the water necessarily has more weight of surface than one above it, and there is an increased resistance resulting.

These limits which Nature has set to sailing under the sea give a good index to the uses to which submarine navigation will be put in the future. We must realise at once that it will never be possible to recover very much property lost by shipwreck at sea. The exception will be in comparatively shallow water, in which, even already, divers can and do work with perfect impunity.

It is strange that both those who have studied the problem of submarine navigation and those who expect to accomplish something with aerial navigation agree that the first uses of their vessels will be for purposes of war. It seems to me that the principal use of submarine boats will always be in war. The submarine torpedo-boat can be made one of the most dangerous engines of destruction man has yet conceived of. Such boats must always be comparatively small, however. They must be able to move quickly and to manœuvre with great agility. The boat "Holland," which I constructed, is 53 feet 4 inches long by 10 feet 3 inches in diameter. I do not believe practicable torpedo-boats to sail under water can ever be constructed which will be much larger than this. These boats, in the first place, must be able to work in channels and harbours. Hence the depth of such waters will always be a limit to the size of torpedo-boats which can work under water in them. If the boats were to be very long for their diameters, they would be very unhandy, whereas it is a cardinal requisite that they should be exceedingly lively. The dimensions of the future submarine war-boat may be a foot or two larger than my boat either way, but I do not believe the increase can be made much greater than this.

The commercial uses of submarine boats will be for sponge and pearl fishing, engineering, and ferry boating. The problem of bridges and lighthouse building will be greatly simplified when we have constructed boats which can work under water for a considerable length of time. I believe the time is near at hand when vessels can carry a boat-load of men to the bottom of a body of water and remain there during the whole of a working day. Foundations can be laid with the same accuracy that is maintained on land above water. Materials can be carried below and utilised with great rapidity. A submarine boat will also be extremely valuable for surveying the topography of land under water. Boats can proceed along the surface of the bottom, and by automatic registers obtain with absolute accuracy the precise formation of bottom. This will be of very great value in war, when, as in Manila Bay, the ships of a fleet sail into a strange harbour. It would also be a safe method of insurance against such disasters as the cruiser "Charleston" suffered a short time ago.

Again, submarine ferry-boats could be made which would be absolutely safe from collision and which, in places like the English Channel, would be free from the inconveniences of storms and heavy seas. Vessels could be built which would automatically remain at a certain depth below the surface, and arrangements could be perfected by which boats going in opposite directions would move at different depths, thus avoiding all possibility of collision.

The problem of submarine navigation has been solved, not by the application of the principles upon which the fish swims under water, but by utilising a few simple principles of mechanics. The fish swims by inflating its body with air when it wishes to go to the surface of the water, and by discharging the air when it

wishes to go below. The practicable submarine boat, however, must be as near as possible to the specific weight of water. My own boat weighs about 250 lbs. less than an equal bulk of salt water. Thus, if the machinery ever gets out of order, it will immediately rise to the top. The descent into the water or the rising to the surface is controlled by a sort of wing in the back of the boat, which operates very much as a rudder. Fresh air is supplied by slowly releasing through reducing valves 30 cubic feet of compressed air that is carried by the boat. This air is released into a first and second chamber before being turned loose entirely, so that finally it becomes of a normal pressure. The pressure never varied 1 oz. to the square inch.

The speed of under-water boats is limited by the power that can be put into them. Electric storage batteries must in all cases be used. Experiments were made with petroleum, steam engines, and with other propelling machinery, but none of them proved of value in the attempt to operate safely the submarine vessel. The invention of the electric storage battery has made submarine navigation possible for practicable uses, for it greatly increased the possible radius of action. It will thus be easily seen that a boat might travel one mile at 20 knots, but that in doing so as much power would be expended as would be necessary to carry the boat two miles at 15 knots.

Submarine navigation is already accomplished. It is henceforth simply a question of development. I do not think vessels will ever be very large, for there would be no use for them. But, for all the uses I have mentioned, I feel confident that in a very few years submarine vessels will be running, and that they will grow rapidly into use.—*Army and Navy Journal.*

MILITARY NOTES.

PRINCIPAL APPOINTMENTS AND PROMOTIONS FOR SEPTEMBER, 1900.

Major-General R. Oldfield, to be Colonel Commandant of the Royal Regiment of Artillery. Major-General (temporary Lieut.-General) Sir W. F. Butler, K.C.B., to be a Lieut.-General on the Staff to command the troops at Aldershot. Lieut.-Colonel H. De la M. Hervey, I.S.C., to be an officiating Colonel on the Staff in India, and to have the substantive rank of Colonel in the Army. Lieut.-Colonel A. F. Barrow, C.M.G., D.S.O., I.S.C., to be an officiating A.Q.M.G., in India and to have the substantive rank of Colonel in the Army. Lieut.-Colonel and Brevet Colonel G. L. R. Richardson, C.B., C.I.E., I.S.C., to be an officiating Colonel on the Staff in India, and to have the substantive rank of Colonel in the Army. Colonel N. L. Walford, a Colonel on the Staff for R.A., is granted the temporary rank of Major-General whilst commanding the troops in the Western District. Colonel L. R. H. D. Campbell, I.S.C., is granted the local rank of Brigadier-General whilst employed on the Lines of Communication in Northern China. Colonel A. G. Raper to be a Colonel on the Staff to command the troops in Jamaica, and to have the temporary rank of Major-General whilst so employed. Lieut.-Colonel W. E. Briggs, the Hampshire Regiment, to be Colonel. Colonel (temporary Brigadier-General) J. W. Murray, commanding the Lines of Communication, Natal, is granted the local rank of Major-General whilst so employed. Colonel W. F. Stevenson, M.B., R.A.M.C., is granted the temporary rank of Surgeon-General whilst P.M.O. at Army Headquarters, South Africa. Lieut.-Colonel S. B. Beatson, C.B., I.S.C., is granted the temporary rank of Colonel whilst Inspector-General of the Imperial Service Troops. Lieut.-Colonel V. J. Dawson, from Coldstream Guards, to be Officer Commanding the Regiment and Regimental District, the Irish Guards and to have the temporary rank of Colonel whilst so employed. Brevet Colonel Sir S. M. Lockhart, Bart., M.V.O., is appointed a temporary Brigadier-General on the Staff to command a Cavalry Brigade at the Curragh, with the temporary rank of Brigadier-General whilst so employed, and is granted the substantive rank of Colonel in the Army. Lieut.-Colonel E. O. F. Hamilton, The Queen's (Royal West Surrey Regiment), to be a Brigadier-General on the Staff to command an Infantry Brigade and to have the local rank of Brigadier-General whilst so employed. Brevet Colonel G. Stanley, A.S.C., Director of Transport, Natal, is to be graded as an A.A.G. Colonel J. K. Trotter, C.M.G., to be a D.A.G on the Lines of Communication in South Africa. Colonel E. H. FitzHerbert from h.p. to be Colonel to command the 7th (The Royal Fusiliers, City of London Regiment) and the 57th (The Duke of Cambridge's Own Middlesex Regiment) Regimental Districts. Brevet Colonel E. R. Courtney from Lieut.-Colonel h.p. to be Colonel to command the 10th Regimental District (The Lincolnshire Regiment). Lieut.-Colonel and Colonel A. H. Paget, Scots Guards, to be a Major-General on the Staff to command an Infantry Brigade, Field Force, South Africa, with the local rank of Major-General whilst so employed. Brevet Colonel W. W. M. Smith to be an A.A.G. for Instruction and to have the substantive rank of Colonel in the Army Major and Brevet Colonel G. G. Cunningham, D.S.O., the Sherwood Foresters (Derbyshire Regiment), to be a Brigadier-General on the Staff to command a Brigade and to have the local rank of Brigadier-General whilst so employed. Lieut.-Colonel F. A. Aylmer, R.G.A., to be Colonel. Lieut.-Colonel F. W. Bennet, R.E., to be Colonel. Major-General

H. A. Bushman to be Colonel of the 9th Lancers. Colonel H. R., Viscount Downe, C.I.E., to be graded as an A.A.G., whilst in charge of the Foreign Military Attachés. Lieut.-Colonel T. Currie, C.B., the Prince of Wales (North Staffordshire Regiment), to be Colonel. Lieut.-Colonel A. Heathcote, R.E., to be Colonel. Colonel (temporary Brigadier-General) O'M. Creagh, V.C., I.S.C., is granted the local rank of Major-General whilst employed in China. General H Le Cocq to be Colonel Commandant Royal Artillery. Colonel C. E. Beckett, C.B., to be an A.Q.M.G. at Head Quarters.

INDIA.—The Government of India have sanctioned the proposals made last January for the organisation of mule and pony transport which will be purchased on moblisation, in order to expand the peace cadres into full corps. The scheme includes the raising of another pack mule corps for use in the field army in place of the corps of ambulance riding mules previously sanctioned. Under the new scheme the peace organisation will admit of the rapid expansion of each cadre, and their coming under the command of a British officer drawn from a regiment not mobilised, with two British warrant officers, two British non-commissioned officers, and a specified number of Native non-commissioned officers and drivers. Each pack mule corps when expanded will consist of 768 mules, with a carrying power of 1,280 maunds, while for a cavalry brigade there will be 936 mules, with a carrying power of 300 cwt., 648 of these mules being for draught, 216 for pack, and 72 for depôt. The troop scheme will involve the purchase of 3,063 animals on mobilisation and the entertainment of 1,295 men for supervision and establishment on expansion. The staff pay of British commandants will be 300 rupes per month. —*The Pioneer Mail.*

AUSTRIA-HUNGARY.—The Austrian Army is giving the automobile a series of severe tests in its army manœuvres this year, to determine how far it is applicable to the battle-field. The military authorities have ordered twelve Bollée-Ditrich automobiles from the factory in Baden, which will be employed in connection with the ambulance corps. The staff officers are also going to be mounted on automobiles, motocycles being requisitioned in their cases. The experiments will be very exacting, since the manœuvres will take place in the Carpathian Mountains, a territory hardly adapted to the successful employment of automobiles to any great extent.—*Scientific American.*

Le Siècle states that there has been a serious accident recently in connection with automobiles. Three Austrian generals, Bihar, Kobra, and Steffan, were driving to Jaslo, in order to be present at the Austrian manœuvres, when their carriage was run into by an automobile going at a high rate of speed. All three generals were very much hurt, and the case of General Bihar is considered to be particularly grave.

In 1896, 1897, and 1898 a series of experiments were carried out at the School for Musketry at Bruck on the Leitha, in order to clear up certain questions regarding fire discipline and troop formations under fire. The following are the results of the experiments:—

1ST EXPERIMENT.

Whether in short-range firing (800 paces and less) the efficacy of the fire is sufficient when retaining a fixed sight (500 paces), or is it increased by placing the sight to the proper ranges?

Two sections were made to fire under precisely similar conditions, but one fired with a fixed and the other with an adjustable sight.

At distances at 700 paces and upwards the difference in units was practically nil. From 500 to 300 paces the section firing with a fixed sight obtained better results than the other. From this it must be concluded that from 800 paces and less sufficient efficacy is obtained by firing with a fixed sight.

2ND EXPERIMENT.

To investigate the effects of the different kinds of fire. To ascertain which methods gives the best results in the least time and with the smallest expenditure of ammunition.

The conclusion arrived at was that an accelerated rate of fire did not produce a better result. The percentage of hits was the same for deliberate as for rapid firing, or, at any rate, the difference was altogether insignificant.

3RD EXPERIMENT.

In what formation does the volley firing of a body of men in close order give the best results?

This experiment was carried out, the exercises being repeated four times at a distance of 640 paces with the following results :—

1. Both ranks standing, 26·85 per cent. of hits.
2. First rank kneeling, second standing, 31·37 per cent. of hits.
3. Both ranks kneeling, 32·69 per cent. of hits.
4. First rank lying down, second kneeling, 32·72 per cent. of hits.

At 800 paces the exercises being repeated 25 times.

5. Both ranks standing, 21·34 per cent. of hits.
6. First rank kneeling, second standing, 27·70 per cent. of hits.
7. Both ranks kneeling, 24·85 per cent.
8. First rank lying down, second kneeling, 27·96 per cent. of hits.

What is especially remarkable in these experiments is the increase in the percentage of hits when one rank is higher than the other, and points to the fact that great attention should be paid to firing in tiers.

4TH EXPERIMENT.

Results compared of various kinds of fire executed by troops in close order.

This experiment was repeated 22 times and gave the following results :—

Deliberate volley firing, 29 73 per cent. of hits.
Rapid volley firing, 24·06 per cent. of hits.
Magazine fire, 24·34 per cent of hits.

5TH EXPERIMENT.

This was carried out with the view of ascertaining the accuracy of the weapon and the tactical importance of rifle-fire at long ranges, as well as the methods of utilising the latter to the greatest advantage.

Experiments carried out by individuals at distances from 1,600 to 2,000 paces gave the following results :—

1. Sections of a company forming a line of skirmishers advancing over a flat country can be completely annihilated in three minutes by two sections of the enemy firing about 5 cartridges a man.
2. A half company forming the company reserve, and following in line at 200 paces distance, can be destroyed in one and a half minutes by a company of the enemy firing 3 cartridges a man.
3. A company (battalion reserve) formed in column of half companies and marching 400 paces in rear of the company reserve, loses in three minutes 50 per cent. of its effective by the fire of a company of the enemy firing 5 cartridges a man.
4. A line of 108 men in single rank loses in three minutes 50 per cent. of its effective from a company of the enemy firing 5 cartridges a man.
5. A company in line of sections under the fire of a hostile company, firing 5 cartridges a man, loses 10 per cent. of its effective in three minutes.

This last experiment seems to show that a line of sections formation is the most favourable one against fire at long distances.

6TH EXPERIMENT.

What is the best formation for a line of skirmishers?

A skirmisher's fire was directed against a line of skirmishers in loose and in close order, and on groups of skirmishers at 640 paces. The hits were 14·15 per cent., 31·43 per cent., and 26·19 per cent. respectively.

7TH EXPERIMENT.

What is the efficacy of infantry fire against artillery at long ranges?

The targets represented a half battery in action. Four squads fired volleys at it for three minutes at 2,700, 2,100, 1,700, and 1,600 paces, and obtained ·56, 3·15, 5·8, and 7·89 per cent. of hits respectively.

A squad of skirmishers directed rapid fire three minutes on half a battery at 2,100 paces, and fired an average of 13·9 cartridges a man. This exercise was repeated eleven times, and gave a result of 5 per cent. of hits, when each skirmisher fired on a different object. When they all fired at the same object, the percentage was higher, viz., 6·4 per cent.

These various experiments showed the troops, in a practical manner, first, the effects of aimed fire both with fixed and adjustable sights; secondly, they prove the superiority of individual over volley firing.

For musketry, as well as for other branches of instruction, troops should be in battle formation. Training with a view to parade movements may be useful for disciplinary purposes, but, if shooting is the principal factor in a battle, musketry should be the chief object in the instruction of troops.—*Précis* from *Vedette*.

FRANCE.—In an article on the recent French Grand Manœuvres, *Le Progrès Militaire* says that the authorities have still much to learn with regard to their proper organisation. Even in accounts given of them by properly authorised special correspondents, especially by the most conscientious, and those wishing to present matters in as favourable a light as possible, it is difficult to form any idea of the continuity of the dispositions taken by either side. The manœuvres of this year, the author observes, resemble those of previous years. They are rather a school for the troops—to whom they at least impart powers of endurance, and a proper method of utilising ground—than for the chief commanders who rarely find themselves in the presence of problems that they would have to solve in war; problems, the first and perhaps most difficult of which would be seeking for the enemy, examining his positions, and discovering his plans. When the two so-called "armies" opposed to one another commence operations they are already practically in contact, for their various units have been fighting one another for some time in the execution of the army corps, division and brigade manœuvres, which precede the Army Manœuvres. These are, besides, strictly limited, with regard to the ground and the nature of their operations, by the necessity for assembling on the review ground on a fixed day, the review being the crowning, and to many people, the chief event, if not even the *raison d'être*, of the Grand Manœuvres. Under these conditions, continues the article, one cannot be surprised if the manœuvres but imperfectly realise the objects for which they are undertaken. Too much stress cannot be laid on the fact, once and for all, that *Grand* Manœuvres are not intended for the instruction of *small* units and their commanders. Their object is to place *large* units and the *chief* commanders in the presence of difficulties and of problems that they would have to face in war, of which the principal one is to find the enemy first, to have a clear idea of his position and of his plans—always concealing one's own—then to make up one's mind, often very quickly, and to execute one's decision without hesitation. Under these circumstances, the author thinks, the French Grand Manœuvres are not what they should be.

The law for the organisation of the colonial troops, under consideration for several years, and the adoption of which was always being postponed owing to differences of opinion between the War, Naval, and Colonial Departments, was length definitely passed on the 7th July last, after numerous Parliamentary discussions.

The new law places the control of the colonial forces under the War Department. These forces specially organised for the occupation and defence of the colonies and protectorates, may also be used to co-operate in home defence. They are distinct from the metropolitan troops; they have their own regulations and a separate budget, and the War Office has instituted a special Board, charged with the supervision of all matters affecting the *personnel*, instruction, command, and administration of these forces.

In each colony the commander-in-chief of the troops is responsible, in conjunction with the governor, for everything connected with the defence of the colony. This commander-in-chief corresponds with the Minister of War, through the said Governor and the Colonial Minister.

The colonial forces are formed to aid the French and Native units serving in the colonies. The French units are furnished through engagements and re-engagements, and by enrolling men of the home contingent; these later, however, cannot be compelled to serve in the Colonies.

The Colonial troops stationed in France, and called hitherto "Marine Troops," consist of infantry and artillery regiments, companies of artillery workmen, and of artificers.

The infantry units are at present grouped into army corps of two divisions each, and are composed as follows:—

1st Division.

1st Brigade—1st and 5th Regiments, quartered at Cherbourg.
2nd Brigade—2nd and 6th Regiments, quartered at Brest.

2nd Division.

3rd Brigade—3rd and 7th Regiments, quartered at Rochefort.

4th Brigade—4th and 8th Regiments, quartered at Toulon.

There are besides 4 garrison regiments, viz., the 2nd, 5th, and 6th at Brest, and the 4th at Toulon.

The artillery consists of 1 brigade of 2 regiments, 5 companies of workmen, and 1 of artificers.

The 1st Artillery Regiment (Lorient) is composed of 14 batteries, of which 3 are field, 8 foot, and 3 mountain. The 2nd Artillery Regiment (Cherbourg) is also composed of 14 batteries, of which 3 are field, 10 foot, and 1 mountain.

The portion of the colonial troops stationed in the colonies consists of infantry and artillery regiments or units, as well as a disciplinary corps. The composition of these units by decrees, issued on the report of the Minister of War in accordance with an understanding with the Colonial Minister. The law further lays down that the Foreign Legion, the Turco Regiments, the battalions of light infantry, as well as the disciplinary corps, may co-operate with the colonial service.

General officers of colonial troops may be rovided with employment and commands in the home army in a proportion to be fixed by the Minister of War; at the same time general officers of the home army may, under exceptional circumstances and on account of former services in Algeria or the colonies, be entrusted with colonial commands in the proportion of one-fourth of the total number of generals' commands in the colonial forces. The transition of other officers, from one to another of these forces may only be effected by exchange for personal convenience.—*Bulletin de la Presse et de la Bibliographie Militaires.*

The draft of the Budget for 1901 consists of 62 chapters, eight less than the preceding one, in consequence of the suppression of expenses in connection with the colonial medal and of the renewal of credits voted for the Exhibition. It is preceded by a general comparison with the Budget of 1900, which results in an increase of 31,377,037 francs for 1901.

This increase is due to the second section (extraordinary expenses and substitution of war *matériel*) which is increased by 45,000,000 francs, whilst the first section is decreased (apparently, because a portion of the credits not required this year are transferred to the Algerian Budget) to the extent of 10,622,969 francs.

The effective which serves as a basis for the establishment according to the provisions of the Budget for 1901 are as follows :—

29,644 officers.
570,779 rank and file.
143,149 horses.

With the exception of the officers, who are increased by about a hundred, the general effective is diminished by about 3,000 men, and 554 horses. In this decrease must be included 31 officers, 1,161 gendarmes and their horses, who are now maintained by the Algerian Special Budget.

This transfer to the Algerian Budget of the cost of maintaining the gendarmerie does not appear to be logical. The gendarmerie forms an integral portion of the Army whether in Africa or in France, and its cost should be borne by the War Budget just as much as that of other national troops.

Whilst the pupils of the École Militaire of St. Cyr are shown in the effective, those of the École Polytechnique are not included in it, although the latter are, with rare exceptions, as much a portion of the Army as the former.

Infantry.

The formation of 4 battalions per regiment has not yet been completely carried out; there are still wanting 115 companies and 192 lieutenants. Its effective amounts to 293,574 men, or 3,015 less than in 1900. As last year the list shows 4 battalions of Zouaves at home, whereas there are only 2 at Sathonay. The African light infantry battalions are decreased by 70 men. In spite of the increase in the number of the men who only serve for one year with the colours, the disciplinary companies still show the same effective, viz., 1,016 men for 5 companies. 10,590 men are shown in the Foreign Legion, and 20,988 in the Tirailleurs.

Cavalry.

The home cavalry shows a decrease in its effective of 5,381 men, although the number of the horses remains the same.

The effective of the African Cavalry, viz., Chasseurs d'Afrique and Spahis, is exactly the same as last year, 8,579 men and 8,066 horses, that is to say, more than 500 men are dismounted, or, rather, not provided with horses, on account of being in various employments.

Artillery.

The artillery figures in the 1901 Budget with an effective of 75,064 men, a decrease of 6,414 men on the effective of last year. On the other hand, the effective of the horses amounts to 38,928, or an increase of 1,264 on the last budget. It also shows a deficiency of 80 lieutenants.

Engineers.

On account of the new formations, the engineers have undergone a decrease of 557 men and an increase of 6 horses.

Transport.

This service also shows a decrease of 882 men and 1,154 horses.—*Précis* from *Le Progrès Militaire*.

GERMANY.—On 7th May, 1859, the Prussian Cabinet directed Prince Regent Wilhelm to purchase 300 breech-loading guns. Thus the foundation of Germany's field artillery was laid. Now the Army has 540 batteries, composed of 3,240 pieces of ordnance. It was long before the advantages of the rifled breech-loader over the smooth-bore were acknowledged even by artillery officers; for no progress had been made in the manufacture of ordnance since the beginning of the century, and the men were totally unfamiliar with the use of the new weapon. At target practice the results obtained were no better than those obtained with the old gun, largely for the reason that no one knew how to manipulate the breech-loader.

During the Danish War, however, General-Inspector of Artillery von Hindersin recognised the efficiency of the weapon and saw that the men were not skilful enough in its use. Even during the war he did his utmost to train his artillerists; but it was not until 1867 that an ordnance school, consisting of a field battery and siege battery, was founded. The purpose of the school was to train a sufficient number of instructors for the artillery, who were to impart to the men under their command the knowledge which they had themselves acquired.

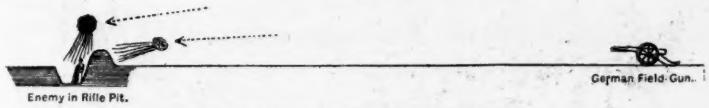
The school, says the *Illustrierte Zeitung*, was established at Berlin; its proving grounds were at Teagel. So efficient was the system of training, that in the war of 1870-1871 the artillery showed a marked improvement in its work. After the treaty of peace was signed the scope of the school was broadened. The re-armament of the light artillery in 1873 and in 1896 rendered new courses of instruction necessary. In 1889 the Prussian Kriegsministerium decided that every officer of the field artillery was to take a course at the school; at the same time a second training battery was organised, and both batteries transferred to Jüterbog. Foot and field artillery were now separated; and for each a distinct training school was established. A third training battery completed the first division of the field artillery school; and in the course of another ten years still another battery was added. On 1st October, 1900, a howitzer division will be organised as part of the field artillery school.

The reduction of the period of service to two years has increased the amount of work to be performed by the various regiments. The time of instruction has been reduced by one-third. The commander of the battery finds it no light task to instruct the men with so limited a time at his disposal. Moreover, the short time allotted for target practice during summer renders it extremely difficult to give thorough instruction.

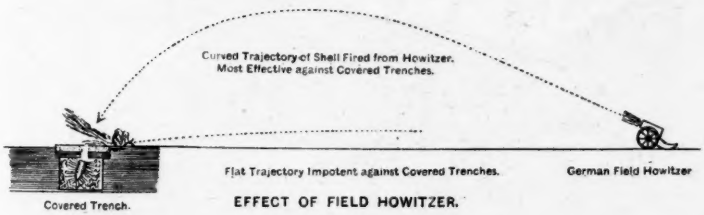
These obstacles have, to a certain extent, been overcome by the re-organised training school. Annually about 500 officers in every branch of the Service pass a certain length of time at the school. With the exception of the Bavarian subaltern officers, who have their own school at Lechfeld, the officers of all the German contingents must go to Jüterbog. The batteries are manned by selected non-commissioned officers and crews, and drawn by well-trained horses, so that the commanding officers are in no way hindered in learning how most effectively to use their weapons.

Mobile almost as a body of cavalry, a battery can traverse a country at a high speed; no ditch, no hill can stay its course. Utilising every cover, every bit of shady woodland, the six pieces finally take up a position which commands the battle-field. A few commands and motions are given, and immediately the rear guns swing from right to left out of the column. Reducing its gait from a rapid gallop to a speed which is better suited to the character of the country, the battery halts behind the flat crest of a hill. After unlimbering, a shot immediately thunders forth. This first shot, fired at a range of 4,000 yards, falls short of the mark. "Four thousand four hundred" is the next command uttered. Fifteen seconds later a cloud of dust is cast up by a shrapnel shell and a hostile gun, half-hidden, is exposed. The wind slowly blows away the smoke, and soon the next gun, and the next in the enemy's trenches appear. The officers in the firing line

point to bushes, to bits of shrubbery, to trees, which enable the gunners to train their weapons with greater accuracy on the enemy's position. Then the enemy opens fire; for he knows that concealment is no longer possible. "The first gun is mounted in front of the barn," cries the commander, and fires his third shot at a range of 4,200 yards. A glance through his powerful field-glasses shows that the shot has fallen somewhat short of the mark. The fourth shot again exposes the hostile gun; for it has been fired at a range of 4,300 yards. The commander now knows that he has pinned his enemy in a fork, one prong of which is 4,200 yards long, and terminates in front of the target, and the other of which is 4,300 yards long and extends behind the target. After having thus accurately determined the position of the enemy, the real bombardment begins. The order is given to cease firing. The men are then ordered to distribute their shot and to fire at 4,200 yards. Each gun is sighted for a corresponding piece in the enemy's battery; and the observations show that each shot has told. The next orders direct the men to fire their shrapnel directly over the enemy. As each shell explodes, 300 leaden balls are scattered among the hostile gun crews. The fire is then slackened in order that the effect of the shots can be better observed. Shell after shell whistles through the air; after every shot the piece recoils. With modern quick-loading devices and smokeless powder, a well-trained battery can fire 50 shots per minute. An enemy's guns can be put out of action in the manner we have described, even in unfavourable weather, in about ten or fifteen minutes.



EFFECT OF A SHELL FIRED FROM FIELD GUN.


Curved Trajectory of Shell Fired from Howitzer.
Most Effective against Covered Trenches.
Flat Trajectory Impotent against Covered Trenches.
German Field Howitzer
Covered Trench.

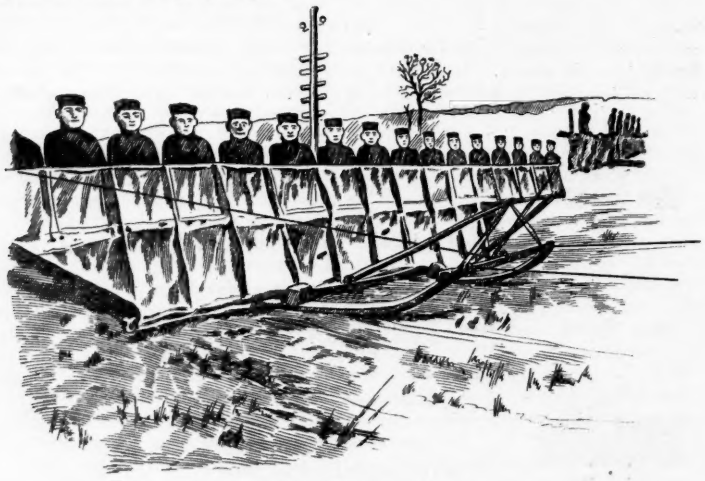
EFFECT OF FIELD HOWITZER.

SCHEMATIC REPRESENTATION OF TARGET PRACTICE.

The German Army has ever been trained to act on the offensive, while most European Armies are trained to act on the defensive. In order to protect themselves from the terrible effect of German shrapnel, other forces resort to natural and artificial covers, trenches, and field fortifications. Since the parapet of a trench will receive most of the balls of an exploding shrapnel, Germany is now using a shell which is timed to burst directly over the trench, so that the projectiles will, like dynamite, be discharged downwardly. In the French Army the effect of this shell is counteracted by field fortifications in which beams and earthworks are so arranged as to protect the artillery from the shell bursting in front of or above

the trench. Under these conditions the effect of a shell whose trajectory is flat is very small indeed. Despite the protests of many old and experienced Army officers, the German War Department has added to each army corps three batteries of field howitzers so as to enable the artillery to cope with every emergency. The uniformity of armament which had previously been one of the characteristics of the German Army was destroyed, it is true; but the increased efficiency of the artillery has overcome whatever objections were once made.

Instead of a barrel 6½ feet in length and 3 inches diameter, as in the field gun, the howitzer has a short 4-inch barrel, which can discharge a shell at such an elevation that the trajectory will be a curve, the highest point of which is at a considerable elevation from the ground. The shell, therefore, plunges at a very slight inclination from the vertical down through the earth and timber covering of a trench and bursts in the very midst of the enemy. The weight of the ammunition used in the howitzer (each shell weighs 44 lbs.) limits the sphere of the weapon's action, since in modern field operations it is extremely important that the guns be served as rapidly as possible.



MOVABLE TARGET OF DUMMY FIGURES.

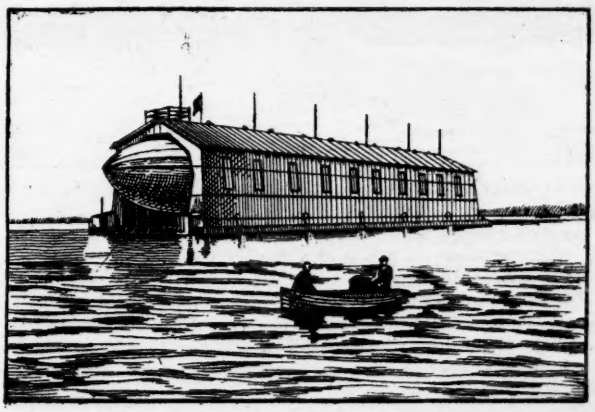
Since the school was founded each shot fired has been registered. In every battery an officer is detailed to note every circumstance attending the firing of a shell, the elevation of the gun, corrections for the sights, adjustment of the primers, etc. Near each target an armoured turret or other protected structure is erected in which an officer is stationed, whose duty it is to note the number of hits and their effect, and to gather other statistical information which may be of service. Before practice begins he inspects his end of the ground, examines the enemy (comprising a number of painted dummy figures) and decides to his own satisfaction whether the conditions approximate, as closely as possible, those under which an actual battle would be fought. Men stationed at other points telephone to the commander of the battery when the ground is clear.

After target practice is over, the results obtained are chalked down on a huge black-board in the presence of all the officers.—*Scientific American.*

The *Militär-Wochenblatt* publishes an article on the Cockerill-Nordenfeldt Q.F. field gun, which it states is the only gun really in competition with the newest

type of Krupp field gun. Both guns are of the same calibre—namely, 75-millimetre, or 2·9-inch. The great peculiarity of the Cockerill-Nordenfeldt is that, although it is a very quick firing gun, its carriage is rigid and is furnished with neither a pneumatic brake nor a spade. The recoil is dealt with by means of a wedge-shaped skid on each wheel, which skid is connected by a chain to a spiral spring. With the recoil the wheel forces the skid back and runs up on to it. When the force of the recoil is spent the wheel runs down off the skid, and at the same time the spring, which has been stretched by the forcing back of the skid, recovers itself and pulls the skid back into its first position. On the march the skid is differently applied and is used as a brake. The barrel of the Cockerill-Nordenfeldt is nearly 6 inches longer than that of the Krupp, but the barrel and breech together are lighter than the Krupp by about 13 lbs. The carriages and accessories, however, are much heavier than the Krupp, both in the heavy and light forms in which they are made. Both guns throw a shell of about 14 lbs., the muzzle velocity for the Krupp being 1,683 feet per second, and for the Cockerill-Nordenfeldt 1,722 feet, the respective rates of firing being 10·15 and 14 per minute. —*The Times.*

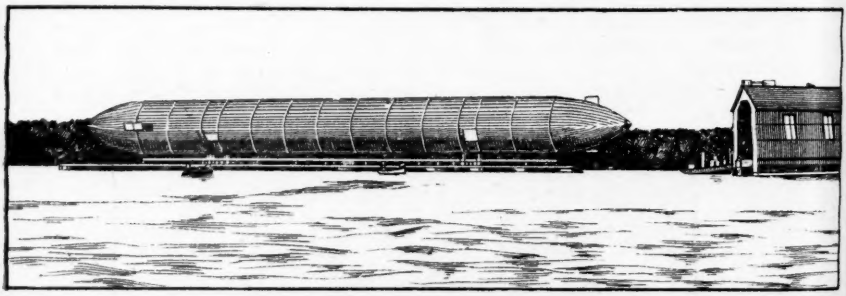
GERMANY.—The 2nd July will long be remembered by aeronauts, for on that day occurred the first ascension of the great air-ship just completed by Count Zeppelin, the cavalry officer of Wurtemburg, who has so long been superintending the construction of his balloon in a huge floating house on Lake Constance, a site admirably adapted for work of this kind, as it offers ample space and in case of accident the results are likely to be much less disastrous than on land.



VIEW OF FLOATING HOUSE WITH BALLOON.

The frame of the balloon, which is 416 feet long and 38 feet in diameter, is composed of aluminium trellis work and holds seventeen balloons of comparatively small size, thus dividing the body of the air-ship into compartments, an arrangement the advantages of which are quite apparent. When fully inflated, the air-ship will contain 11,300 cubic meters (399,059·5 cubic feet) of hydrogen gas, and will, consequently, have a lifting capacity of 10 tons. The propellers are actuated by two Daimler motors of 15-H.P. each, one being placed in the car at the front of the ship and the other in the rear car. The occupants of these cars can communicate with one another by telephone. By means of a weight arranged to slide on a rod under the air-ship, the latter can be made to move in a horizontal or an inclined plane, as desired.

Count Zeppelin, like all originators of great schemes, has had many unexpected difficulties to contend with, not the least of which was, probably, a tempest which tore his great floating house from its moorings and did other damage, which was repaired only at great expense of time and labour as well as of money. Numerous other accidents interfered with the ascension of his balloon, but finally 30th June was officially given out as the date of the first trial. On that day thousands of people gathered on the shores of the lake, and the water was covered by a fleet that included craft of all kinds, from the fisherman's primitive boat to the most modern private steam yachts and launches, all filled with would-be spectators of the event. They were doomed to disappointment, however, for the inflation of the air-ship was not completed and so, of course, no ascent could be made; nor was all ready on the second day, but towards night of that day the raft on which the air-ship rested was towed out on the lake a short distance. Even on the third day it seemed doubtful for some time whether any ascension could be made, but finally, just before eight o'clock, the raft and the balloon were again towed out of the house, the last rope was cut at three minutes after eight, the sliding weight was quickly regulated, and the air-ship began to move, trying to rise in a graceful curve, which, however, was interrupted at a height of about 150 feet by what seemed to be a rather strong current of air, but it is said that the line connected



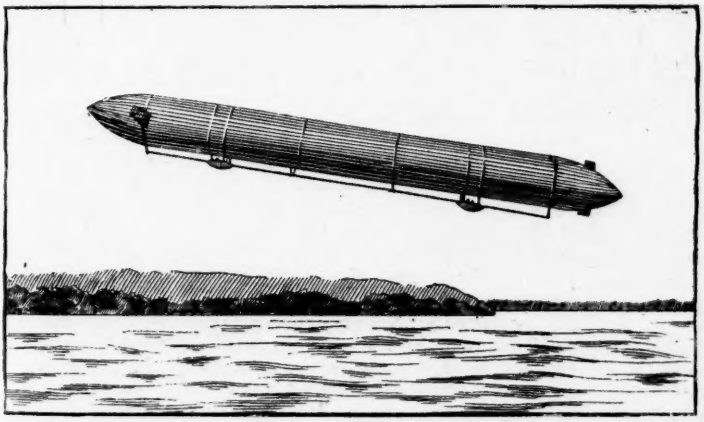
Count Zeppelin's Balloon on its Raft in Front of the Floating House.

with the sliding weight became entangled with a line from one of the side propellers. After that it was carried along with the wind in the direction of Immenstaad, where it descended to the water at 8.20, having attained a height of something over 1,300 feet and covered a distance of three and a half miles, travelling with the wind, at a speed of 26 feet per second. During this trial trip Count Zeppelin occupied the forward car with an amateur, Mr. von Bassus, of Munich, and an engineer, while in the rear car were the African explorer, Eugene Wolff, and a machinist.

Although all the hopes and expectations of the promoters and friends of the enterprise were not realised by the results obtained at the ascension of 2nd July, these results are interesting and important, and, as far as the ascent and descent are concerned, are entirely satisfactory; but it was evident that the amount of energy developed by the propellers was insufficient. Instead of the promised speed of 32 feet per second, a speed of only 26 feet per second was really obtained; moreover, in its present shape, the air-ship can scarcely be called dirigible. It is very certain that some decided changes will have to be made, and on the nature of these changes will depend its ultimate success; for if they concern only the motors, such alterations will probably be quickly made, but it is evident that radical changes must also be made in the steering apparatus. A steering device should be entirely removed from the domain of chance; if ropes are required for its manipulation, they should be so arranged that there would be

absolutely no danger of their becoming entangled with other ropes or of their breaking. A steering device that will not obey the hand of the helmsman promptly and under all circumstances is worse than none. It should not be forgotten that changes in the machinery may involve an increase in the weight of the balloon itself, thereby causing a change in the static conditions, which have been considered the strongest point of the air-ship.

The Zeppelin air-ship belongs to the class of so-called aerostatic balloons or dirigible air-ships which hold a middle ground between the purely dynamic flying machines and the manually-operated devices, resembling in this respect what are known as "balloon flying machines;" that is, those air-ships in which hydrogen is used only for keeping the apparatus suspended, while mechanical power is employed for driving and steering it. The first notable trial of such an aerostatic balloon was made by Henry Giffard in 1855, and this was followed in 1872 by that of Dupuy de Lôme and Paul Hänlein, and in 1879 by that of Tissandier. All of these experiments were without important results, and the French captains, Renard and Krebs, were the first to bring an air-ship back to its starting point after a voyage of twenty minutes, having developed a speed of 19 feet per second. This record, which they obtained with the "La France," a balloon built by them, that made an ascension on 9th August, 1894, has been equalled by no one since.



BALLOON IN THE AIR.

One thing is very certain, and that is, that no air-ship of the Zeppelin type will ever carry many people, although it may be useful for military purposes, and possibly for exploring expeditions that are not of too extended a character; but, on the other hand, the enormous expense incurred in the building of such an air-ship would be a serious obstacle in the way of its use. About $24,000 (£4,950) was invested in this undertaking, and it cost $2,380 (£491) to inflate the balloons for the ascension on 2nd July.

Much of the above *data* has been obtained from articles that have been published in *l'Illustration* and *Ueber Land und Meer.—Scientific American.*

ITALY.—The instructions recently published as a supplement to the regulations for the infantry manœuvres adopts the principles of the infantry musketry school at Parma, which makes gymnastic exercises form a chief factor in the training of the soldier. The following general rules are laid down for guidance:—

1. To change frequently from gymnastic to other exercises, and *vice versâ*, so as to vary the daily work as much as possible.
2. To enjoin easy exercises and not to repeat them too often at one time, so as to avoid fatigue or distaste.
3. To give short lessons and frequent rests, especially when first commencing.
4. To proceed gradually and to cause combined movements to be executed, as a rule, by signal.
5. To insist on smartness, quickness, and correctness.
6. To make the importance of each movement understood, without entering into long explanations.
7. Not to exact efforts of memory.
8. To always keep the chief end in view, which is to make infantry units capable of manœuvring with energy and precision, whilst always remaining at the disposal of the commanding officer. The instructions insist on the importance a company commander should attach to gymnastic exercises, as well as on the necessity, not to train a limited number of men capable of executing difficult movements, but to develop the physical education of the whole, by a progressive training capable of being followed by all, so as to educate the entire company in such a manner that they may be able to cross, completely equipped, such obstacles as may be met with on the field of battle. Gymnastic instruction commences from the date of the recruit's joining, and continues for the whole time of their drills. It consists of :—

a. Individual exercises, which are obligatory for lieutenants, sub-lieutenants, non-commissioned officers and men; but those of more than thirty years of age and only obliged to do sufficient to keep them in such condition as to be able to set an example of strength and endurance to young soldiers, and to enable them to keep their place in the section, to which they belong, during manœuvres. Individual gymnastic training includes setting-up exercises with or without arms, running, jumping, free gymnastics, and leg exercises bayonet fighting, and climbing.

b. Collective exercises, which are successively performed by groups of two and four men, by squads, and by companies, with the rifle and valise, and sometimes in complete marching order. The programme of these exercises includes marching, running, crossing ditches and canals, escalading walls, buildings, barriers, short but steep slopes, etc.

The obstacles are, as far as possible, arranged on the roads leading to the drill-ground, so that then men may come across them almost every day on their way there. They are made up to at least the width of a squad on a war footing and sufficient space is allowed to enable each portion of the troops to regain its formation after negotiating the obstacle. The men must advance on the obstacle in regulation formation, and cross it without word of command, as quickly as possible, and in silence and order. Every dangerous obstacle should be left on one side.

Marching, fencing, and cycling competitions for officers, non-commissioned officers and men, individually and by units, are organised at the termination of the annual course of instruction, when medals, money prizes, and certificates are awarded.

In addition to the regular gymnastic exercises, the instructions recommend games to stimulate agility, endurance, and quickness of decision. Each battalion of infantry possesses a set of gymnastic apparatus and obstacles consisting of a movable horizontal bar with two uprights, a vertical frame provided with two

poles, one smooth and one knotted rope; four improvised hedges; a ladder with a jumping board; forty-eight supports. Corps are authorised to use other non-regulation apparatus, on condition of being able to procure them at small expense. —*Bulletin de la Presse et de la Bibliographie Militaires.*

The *Italia Militare e Marina* states that in consequence of the wise measures now adopted the Italian Red Cross Society is prepared to put in the field when requested the following accommodation for the sick and wounded :—Eight military hospitals of 100 beds, 41 military hospitals of 50 beds, which on occasion can be increased to 100 beds, 31 mountain ambulances, 15 hospital trains, 44 first-aid stations, 2 river ambulances, and 2 hospital-ships. During the army manœuvres, which are now in progress, the society has mobilised 6 military hospitals, 1 field hospital, and a section of a hospital train. At the same time a section of a hospital train has been executing a journey of instruction in the Bari district. At the end of 1899 the staff of the society consisted of 1,265 doctors and 2,050 assistants.

JAPAN.—The *Militär-Wochenblatt* states that the following is the composition of the Japanese forces under Lieut.-General Yamagutschi in China :—

The 11th, 41st, 21st, and 42nd Infantry Regiments (3 battalions each) belonging to the 5th Division, and each 2,604 men strong; 1 infantry battalion of the 11th Division, 868 strong; the 5th Cavalry Regiment, 360 strong; the 5th Artillery Regiment, consisting of 6 batteries and 150 men each; 3 other field batteries; 1 siege battery of four 12-centimetre guns; 1 pioneer battalion; 1 railway battalion with bridge equipment, and 1 telegraph company. These, altogether, make up, in round numbers, 13 infantry battalions, 3 squadrons, 10 batteries, or 16,000 men and 58 guns.

RUSSIA.—According to the *Militär-Wochenblatt*, the Russian forces at present in China, under command of Lieut.-General Lenewitsch, are as follows :—

The 2nd, 5th, 9th, 10th, 12th, and 15th East Siberian Rifle Regiments, of 2 battalions, and a war strength of 2,093 men each, 3 Cossack sotnias of 191 men each, 2 East Siberian batteries of 320 men each, 1 field mortar battery of 171 men, six 15·2-centimetre guns, 1¼ pioneer and 2 railway companies, together with a telegraph detachment. These make up altogether, in round numbers, 12 battalions, 3 sotnias, 3 batteries, or about 15,000 men, 22 guns, and 8 machine guns.

Russia will take some of the troops originally destined to strengthen her forces in Pechili and transfer them to the Manchurian theatre of war. The 4th Rifle Brigade recently despatched from Odessa reached Port Arthur with the 13th Regiment in the early, and with the 16th Regiment in the latter, days of September. The Russian Odessa journals state that the embarkation of the 1st and 2nd Rifle Brigades, which had already been commenced, has been again postponed. On the other hand, the 5th Rifle Brigade has already left Odessa, and can be assembled at Port Arthur or Vladivostok in the middle of October. The 3rd Rifle Brigade, despatched by the Siberian Railway, is at present at Njertschinsk, and may be sent from thence either to Schilka, or Blagovjeschtensk, or else direct to Chailar in March.

SWEDEN.—The *Gazette de Cologne* states that a rifle has been experimented with at Rosersberg, which, according to Lieut.-Colonel Lemchen, Commandant of the School of Musketry at that place, has all the qualifications necessary for an engine of war, viz., practical utility, correctness, and simplicity of mechanism. Outwardly this rifle resembles the Swedish Mauser, it has the same calibre, and may consequently take the same cartridge. When the magazine is filled, the cartridges enter the chamber automatically, without the firer being obliged, as with other rifles, to open the breech after each shot. Once the magazine is charged, the soldier has merely to aim and to press the trigger as many times as there are

cartridges in the magazine. In addition, the recoil is less than in other fire-arms, as a great portion of the force of the gases which cause the recoil is utilised to reload the weapon and to introduce a cartridge into the chamber. The inventor of this rifle is a Lieutenant Friberg.

TURKEY.—According to the *Rousski Invalid*, the 2nd and 3rd Army Corps are each receiving, in addition to their proper artillery complement, one horse and two mountain batteries. In addition, twenty-four new field batteries are being attached to these two army corps, ten to the one and fourteen to the other. It results from these changes that the distribution of the 248 Turkish Batteries will in future be as follows, viz. :—

Army Corps Districts.	Batteries.			
	Horse.	Field.	Mountain.	Mortar.
1st (Constantinople)	3	30	6	—
2nd (Adrianople)...	3	33	8	—
3rd (Salonica)	3	50	12	6
4th (Erzinghia)	3	30	6	—
5th (Damas)	3	18	3	—
6th (Bagdad)	3	9	3	—
7th (Sana)...	—	3	4	—
Tripolitan Division	—	4	2	—
Hedjaz Division	—	1	2	—
	18	178	46	6

LETTER TO THE EDITOR.

"HOW TO POPULARISE OUR ARMY."

SIR,—In the August number of the *Pall Mall Magazine* appears an article under the above title by a writer who signs himself "Searchlight." This article contains some excellent suggestions, but on the point of barrack construction and fittings the writer has, I think, hardly sufficiently considered the question of cost. He has also, I think, drawn rather a gloomy picture of the barrack-room.

It must be remembered that the barrack-room is not intended to accommodate such as "Searchlight," but is meant for men of a far lower class, who are engaged in hard, rough work and are not over careful with their belongings. Very possibly a barrack-room would be intolerable for "Searchlight" to live in, but I do not think it is so for the average private soldier.

When anyone proposes to build a house to accommodate any person or persons he considers the following points :—

1. The amount of money that is at his disposal. 2. The class of individual for whom he has to provide, and the manner of life of that individual. Given these *data*, he proceeds to evolve (if he be a good architect) a suitable building.

The modern barrack is the evolution of many years, and embodies the combined thought and labour of very many minds.

The room itself and its equipment represent the "survival of the fittest" in their particular line, and, therefore, on Darwinian principles, should be not far from perfection—though, unhappily, they have not quite arrived at that stage yet.

Let us now take "Searchlight's" proposals for improving the barrack-room. These are: (1) to make the room more cheerful; (2) to light it better; (3) to provide carpets; (4) to paper the walls; and (5) to provide superior furniture.

Let us consider these in detail, with their probable cost, bearing in mind also that the private soldier (especially as a recruit) is decidedly rough, and even destructive.

1. *To Make the Room more Cheerful.*—This is a most desirable object, and is attained to a considerable extent by the latest regulations, which provide for a yellow dado in the barrack-room, which brightens it up very much, and affords a welcome relief to the plain lime-white.

2. *To Improve the Lighting.*—This, also, is in every way desirable, but can hardly be accomplished with gas, as anything but the very strongest and plainest fittings would be constantly out of repair. It is, I believe, proposed by degrees to light all barracks with electricity, but this must take many years to accomplish, and the expense will be very great.

3. *To Provide Carpets.*—Here I think "Searchlight" is mistaken. Carpets would be a very considerable expense to start with, would very soon become extremely dirty, and would last a very short time under the hard wear to which they would be subjected. They would be objectionable on sanitary grounds, as they would collect the dirt. It is possible, however, that a covering of kamptulicon might be applied to the floors, but this would probably be very soon destroyed by the men's hob-nailed boots; and here again the expense would be very considerable.

4. *As to Paper on the Walls.*—At present the walls are bare brick, which are lime-whited once in eight years by the contractor, and are also lime-whited by the troops anually. Whenever a case of fever occurs in a barrack-room it has to be vacated, thoroughly fumigated, and the walls freshly lime-whited.

In order to paper a room it must first be plastered—the cost of which is considerable, and the plaster would be liable to constant damage, thereby embittering the already sore question of "barrack damages."

The paper would require to be renewed at least once a year, to maintain it in a sanitary condition, and the expense of stripping and re-papering would be a very serious matter, as this work could not possibly be carried out by the troops, but would have to be done by the contractor.

5. *The Furniture* might perhaps be more comfortable; but here again one is met by the question of cost, and by the fear of increasing the charges for damages. The existing furniture, and, in fact, all the surroundings of the soldiers, are constructed primarily with a view to cleanliness, indestructibility, and cheapness. It is hard to see how all these can be combined in any superior kind of furniture.

If the private soldier's surroundings are compared with those of the sailor (which may be considered a fair comparison, as they are both drawn from the same class, and have equally hard and rough work to do), I do not think there will be found to be any doubt that the soldier is far more comfortable than the sailor.

The question of lavatories is a difficult one, and can hardly be considered in detail here.

In making proposals for the improvement of barracks, it must always be borne in mind that the question of cost, both of construction and of maintenance, has to be most closely considered.

It is extremely difficult even now to maintain barracks in thoroughly good repair with the funds allotted, and it would be almost hopeless to deal with the matter if a very superior class of building was constructed, unless the country were prepared to pay a very much larger annual bill for maintenance.

I am, etc.,

C. H. VERSTURME-BUNBURY,
Captain, R.E.

NAVAL AND MILITARY CALENDAR.

SEPTEMBER, 1900.

1st (Sat.) H.M.S. "Eclipse" arrived at Spithead from East Indies.
,, ,, Launch of torpedo-boat destroyer "Euro" from the Schichau Yard, Elbing, for Italian Navy.
,, ,, Lord Roberts issued a Proclamation annexing the Transvaal on behalf of the British Government.
,, ,, Colonel Plumer recaptured 35 prisoners taken by the Boers at the Klip River.
2nd (S.) H.M.S. "Sappho" sailed for S.E. Coast of America.
3rd (M.) H.M.S. "Hyacinth" commissioned at Devonport for Training Squadron.
,, ,, Major Brooke, R.E., defeated a party of Boers near Kraai Railway Station.
,, ,, Troops despatched to Uganda on account of disturbances in the Protectorate.
4th (T.) H.M.S. "Nymphe" commissioned at Portsmouth for South-east Coast of America.
,, ,, The siege of Ladybrand raised by the Boers.
6th (Th.) H.M.S. "Scylla" commissioned at Chatham for relief service.
,, ,, Lydenberg was captured by the British.
8th (Sat.) Sir Redvers Buller attacked the Boer position, 1,500 feet high, on the Spitz Kop Road, and drove off the enemy. British casualties 13 killed, 25 wounded.
,, ,, Mr. Kruger, accompanied by Mr. Reitz and other Transvaal Government officials, crossed the frontier and reached Lorenço Marques.
9th (S.) Launch of the first-class battle-ship "Hapsburg" from Trieste for Austro-Hungarian Navy.
11th (T.) General Baden-Powell was appointed Chief of the Police Force, to consist of 12,000 men, of the recently annexed territories of the Transvaal and Orange River Colony.
,, ,, German troops, aided by a squadron of the Bengal Lancers, stormed the walled city of Laing-Hsian and killed 500 Chinese.
14th (F.) H.M.S. "Nymphe" left Portsmouth for Mediterranean.
,, ,, Lord Roberts issued a Proclamation to the Boers calling on them to surrender unconditionally, and pointing out to them the consequences of continuing a state of war.
,, ,, General French surprised the Boers at Barberton. He released 23 British officers and 59 men who were prisoners there, and took over 100 prisoners and captured 43 locomotives, and a large quantity of rolling stock and stores.
15th (Sat.) H.M.S. "Vindictive" left Portsmouth for Mediterranean.
,, ,, H.M.S. "Eclipse" paid off at Portsmouth.
,, ,, Russia commenced withdrawing her troops from Pekin and drafted them to Manchuria.
16th (S.) Prince Albert of Saxony was killed in a carriage accident.
18th (T.) General Stevenson occupied Nelspruit without opposition.
,, ,, Count von Waldersee, Commander-in-Chief of the Allied Forces in China, landed at Hong-Kong, and subsequently left for Shanghai and Taku.

18th (T.) The German Emperor, in a Note to the Powers, suggested that their representatives should specify by name the leading Chinese who instigated the recent outrages and insist upon their surrender before entering into diplomatic negotiations with the Chinese Government.
19th (W.) H.M. the Queen inspected a detachment of the West African Frontier Force at Balmoral.
,, ,, A British officer and several soldiers were killed in an explosion while blowing up the Chinese magazine at Tung-Chow.
,, ,, Sir E. Satow, British Minister at Tokio, was appointed to succeed Sir C. Macdonald at Pekin, the latter taking his place at Tokio.
,, ,, Lord Methuen captured a large convoy of the enemy and recovered a 15-pounder gun lost at Colenso, near Hart's River.
,, ,, General Hildyard occupied Vryheid.
20th (Th.) H.M.S. "Amphion" commissioned at Devonport for Pacific.
22nd (Sat.) H.M.S. "Europa" arrived at Plymouth with reliefs from Australia.
23rd (S.) 100 Boers laid down their arms in Portuguese territory, after blowing up their guns and ammunition.
24th (M.) General Pole-Carew with the Guards' Brigade occupied Komati Poort, and captured a large amount of rolling stock and ammunition.
,, ,, 3,000 Boers surrendered to the Portuguese.
27th (Th.) Sir R. Buller occupied the Mac Mac River and the eastern side of the Burgher Pass.
,, ,, Contingent of Royal Canadian Regiment left Pretoria for Canada.
30th (S.) Lord Roberts appointed Commander-in-Chief of the British Army, in succession to Lord Wolseley.

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In many previous reviews in these pages the point has been insisted on that no thorough grasp of the art of tactics as a whole is possible unless the student begins at the beginning and traces each step in its evolution up to the present time in full detail. Half the confusion that exists in the views of the average tactical essayists results from the fact that they draw their *data* primarily from German sources issued during the years immediately following the campaigns of 1866 and 1870, and these in turn were based on the sayings and recollections of the survivors of the great Napoleonic struggles, who had been too shaken in their confidence by the events which culminated on the field of Jena to recognise the substantial basis of experience and fact on which the old line formations really rested.

Some years ago, a great re-action in this respect took place amongst the leading tacticians of Germany. Reviewing their own experiences in 1870, it became very evident that troops trained to the perfection of manœuvre and endurance of punishment which had characterised the battalions and squadrons of Frederick's day, might again and again have been most usefully employed in their own campaigns, but the spirit, even the tradition of the old Army had been lost during the years which followed Jena, and all private effort failed to rediscover it.

It was comparatively easy to find out what the old Army, had achieved on the battle-field, the difficulty was to trace how it had been trained to accomplish these results. Von der Goltz's "Roszbach und Jena," Prince Hohenlohe's "Conversations on Cavalry," and Malackowski's "Scharfe und Revue Taktik" show this tendency very clearly.

To meet this need, the General Staff authorised a thorough investigation of all the State papers of Frederick's reign and a publication of a critical history both of his campaigns and of his work as chief instructor of his armies in the intervening periods of peace.

Of his campaigns, only the first and second Silesian wars, 1740-42 and 1744-45, have as yet been dealt with, and the present number of the *Einzelschriften* deals with the training of the troops during the ten years which elapsed between the latter campaign and the outbreak of the Seven Years' War.

It is a wonderful picture of military activity which is presented to us. If the Germans work hard now to fit themselves for fighting, their ancestors worked even harder. If they are thorough now, they were still more thorough formerly.

But to understand the book, it is absolutely necessary to focus one's mind to the immediate object which lay before the King in those days, which differed very materially from the purposes of the present. The aim of all Frederick's manœuvring was the destruction of the enemy by a single blow. There was to be no indecisive skirmishing fire, but the line was to be formed in such a manner relatively to the opposing front that the enemy had to go down before the overpowering effect of his volleys.

To this end everything was subsidiary, the exact dressing of the line, the slow pace of the advance. These things were not insisted on because they looked pretty, but because they were essential to the maintenance of fire discipline and the delivery of accurate volleys.

Then, as now, fire was everything, *la reste peu de chose*, but they recognised, as we do not, that troops must be drilled to advance in face of heavy losses to such a range that their return fire, when it does begin, shall prove absolutely devastating.

Fire was their cover, not the ground; and the King also taught them by object-lessons that the more time they wasted by shooting at indecisive ranges the heavier would be their losses.

The section dealing with the cavalry is of exceptional interest to those interested in the matter, and forms a valuable introduction to, and confirmation of, the views expressed in Prince Hohenlohe's "Conversations" (not his "Letters.")

The extraordinary thing to note is the increased demands which, year after year, the King was able to make on the endurance of the horses. In 1748 he had been satisfied with attacks of 700 yards distance—300 at the trot, 300 gallop, and 100 charge. In 1751 the distance was extended to 1,500, and in 1755 to 1,800, with disperse, rally, and pursuit thrown in. Nor was he satisfied with a single attack in the day. He would sometimes have them repeated three times in a morning and then have the regiments out again in the afternoon. If the results were not satisfactory, the whole command would be sent to punishment drill. Thus in 1754 the "Bayreuth Dragoons," heroes of Hohenfriedberg, got three months' extra drill for failing to attain the proper standard.

What the Prussian cavalry could do in the field was shown at Lobositz, where sixteen squadrons executed two attacks, one closely following after the other, in which they traversed 10,000 yards, most of it at speed. For several weeks previously the horses had been very short of food, and on the actual day of battle they had not had their saddles off for twenty-nine hours. In those days an officer who suggested his inability to charge because his horses had been saddled-up for sixteen hours would have had a very short shrift indeed from the King.

The remainder of the book is devoted to accounts of the various manœuvres held under the direction of the King, reproducing his criticisms, and wel deserve attentive study.

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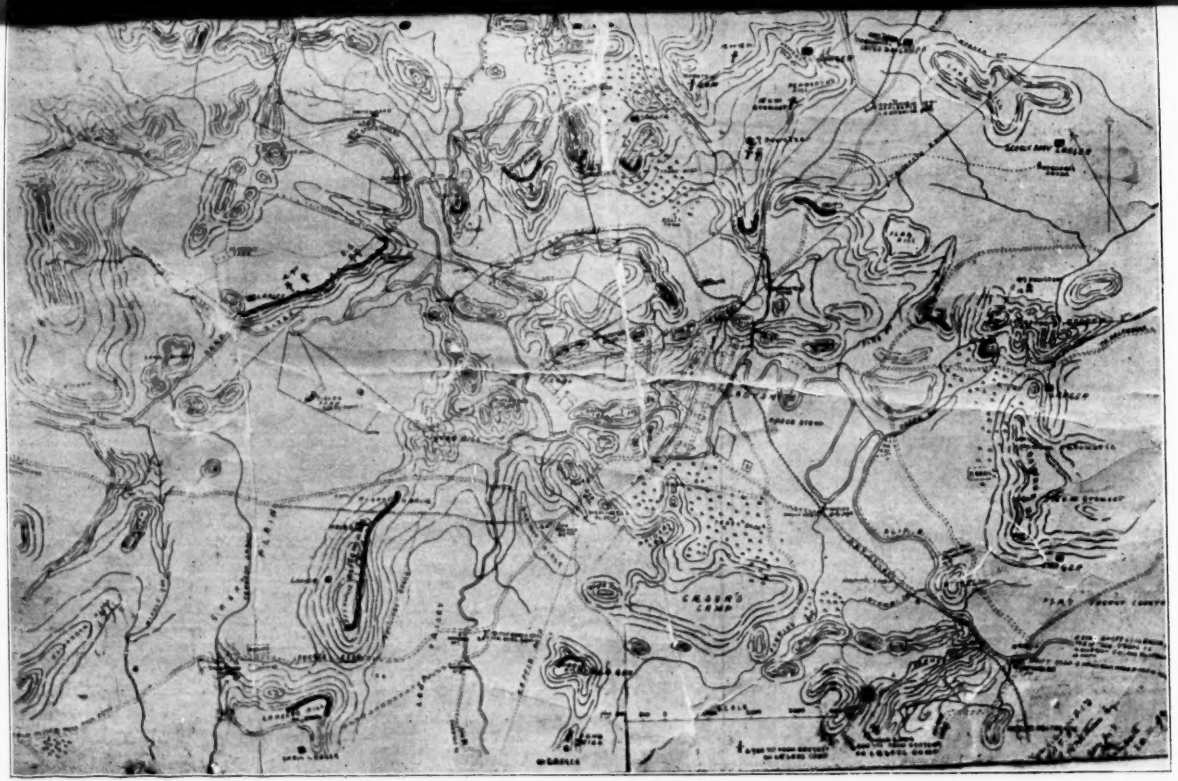

SKETCH OF COUNTRY ROUND LADYSMITH, SHOWING BOER POSITIONS.

(Sent out of Ladysmith by Pigeon Post.)

J. J. K. & Co., London.